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NORMAL GASTRIC DIGESTION [*]

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The normal digestive tract consists of a series of links, each one of which has a special function to perform. The mouth is undoubtedly the coarse comminutor of food; the esophagus is a pipe line or a transit tube; and the stomach can be considered as the first point of arrest for food as it enters the digestive tract proper. To me the stomach is not the essential organ of food digestion, but the great organ for food preparation. It completes the reduction of food to chyme, and for that purpose it shows a clean cut division of labor. Practically all physiologists are agreed that the fundus is essentially more or less of a food reservoir with the minimum of peristalsis, while the antrum is essentially a motor concerned in the fine comminution of food and the final reduction to chyme. There are certain rather well defined conceptions regarding gastric work:

1. The whole tendency of gastric digestion is to produce fine comminution, or to translate a mass of heterogeneous substances into a more or less homogeneous mass. In a very different way, Meunier[1] has attempted to demonstrate by means of a cryoscopic index that the gastric contents are reduced to a certain optimum at which place active evacuation occurs. It is evident, therefore, that with the greatest diversity of foodstuffs the whole tendency of gastric digestion is to reduce them to a state of fine comminution and homogeneity.

2. The stomach is undoubtedly a buffer or sentinel to the most deeply placed portions of the gastro-intestinal tract; namely, the small bowel and the accessory organs of digestion, the liver and the pancreas. It is in this portion that the true digestion and absorption of food occur.

3. The stomach is a "turnstile," or, rather, the pylorus is the "turnstile" for the entrance of food into the true digestive tract; and on the efficiency of this mechanism depends the decision as to whether material shall pass into the lower tract.

4. The stomach shows an extraordinary adaptibility to every variety of foodstuffs and, in my judgment, a selective activity to all varieties of food. In view of the great diversity of food products, representing practically every variety of animal and vegetable life, it is apparent that this little organ does an amount of true mechanical work that can be appreciated only when the whole series of foodstuffs are studied in their transition from their natural state to chyme. This was our work in studying the phenomena of normal digestion at Jefferson over a period of more than eight years, regarding the gastric digestibility of every variety of foodstuff. This series, until recently, has been incomplete; but in a short time we hope to publish the findings covering the entire variety of foods. These studies emphasize more than anything else the extraordinary resilience and adaptability of the normal stomach in health, and associated studies have emphasized the intolerance of the stomach as probably the first evidence of disease.

INVESTIGATION OF GASTRIC FUNCTION

Today, we have apart from physical examination and history taking two great methods of investigating the stomach. One is by roentgen-ray examination, and the other is by means of gastric analysis. The roentgen ray gives the anatomic diagnosis of the stomach—its form, size, position and any alterations in contour. The functions of the stomach that can be observed radiographically, according to Ryle, are tonus, peristaltic activity and emptying time. I can recall Haudek in 1913 saying that the fundamental principles of gastro-intestinal radiography had already been laid down, and yet it was not until 1924 that Moody, Van Neys and Chamberlain, in a study of 600 healthy women and men, pointed out some remarkable variations in the shape and position of these organs, concluding that the use of such terms as gastroptosis was unjustifiable. A. E. Barclay refers to the remarkable alteration in the shape and position of the stomach as the result of disgusting smells, sudden emotion and fright, and on one occasion he saw the normal orthotonic stomach drop nearly 3 inches when the patient was startled by the banging of a door.

Gastric analysis is a physiologic study of gastric work; it is an attempt to throw light on gastric function. Many observers see in it no other purpose than a determination of the acid values, when in truth the determination of acid values is but a single evidence of one of the mucosal functions. Gastric function is the ultimate reduction of food to chyme; it is combined secretory and motor work, and it is by no means a single chemical determination of one of the factors of digestion. I maintained, and I still maintain, that the old method of a single examination of the "digesting stomach" is totally inadequate and gives little indication of what precedes and what will follow that period. Gastric analysis for diagnostic purposes attempts to throw light not only on mucosal function in terms of secretion but also on motor function and muscle tone in terms of chymification and food evacuation. It attempts to throw light on pyloric function in terms of regurgitation and evacuation, and it attempts to throw light on pathologic conditions of the stomach by the identification of pathologic elements in the material removed.

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[*] Read before the Section on Gastro-Enterology and Proctology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] Meunier: Bull. d. Soc. pharmacol. 25: 341-345, 1918.

I suggested the use of a permanent emplacement of the tube in the stomach at one fixed position and the recording of events which occurred at that position to be the most exact method for determining gastric function. By means of fractional gastric examination, many observers have pointed out the acid variations in different parts of the stomach, a fact that accords strictly with the known facts regarding the physiology of the stomach and indicates that the stomach in every instance attempts to and eventually does, in health, render the gastric contents more or less homogeneous. We pointed out some years ago that the most divergent substances require a period for their reduction to normal. Hyperacid substances were reduced to an optimal acidity in a certain length of time; alkalis were neutralized and followed by an optimal acidity; and food substances which were at first poorly admixed were then reduced to the state that produced more or less the so-called optimum.

I performed a series of studies radiographically controlled on hypertonic and atonic stomachs, and there is no question but that the element of admixture is an important one, particularly in the first hour of digestion, or what we call the adjustment period. This varies greatly in different persons and depends on fluid regulation, secretory regulation, peristalsis, duodenal regurgitation and antrum grinding. The element of gravity and the weight of the meal, as well as the tonicity of the gastric walls, all play an important rôle in the sum total of gastric work. In fact, it is these very findings which can be construed not as a criticism of the method, but as emphasizing the necessity for controlling the changes in that way.

In all our studies it was considered a point of importance to introduce the tube in one position and maintain it there. This was rigorously performed and depended on the habitus of the individual. Space does not permit me to demonstrate that, in the many experiments performed on more than 200 normal men, in most instances the students reacted similarly and belonged to a certain type of gastric digestion. In a different, but probably just as satisfactory, fashion, Ryle and his co-workers in England demonstrated more clearly than probably any other way that the findings with fractional analysis properly performed were to all intents and purposes a sufficiently accurate estimation of gastric work for all clinical purposes. Time and again we took the same person who was hypersecretory for one meal and demontrated that he was essentially a hypersecretory individual. In a less striking way, we were able to demonstrate the variation in disease, which was in most instances a lessening in mucosal function.

Perhaps the most striking confirmation of the correctness of fractional analysis when performed in the proper way were the studies of Bennett and Dodds on the alveolar carbon dioxid. Their curves varied strikingly with the curves obtained with the tube in one position. I should like to ask those critics who insist on examining the stomach at different levels, particularly in the early stages of digestion, what possible objection they can have to fractional analysis with the tube in one fixed position and practically the entire meal in progress, and how it was possible to register continuous errors with the whole meat, poultry and fish series during the acme of digestion unless fairly rapid readjustment and constant tendency toward homogeneity characterized the work of the normal stomach.

The idea that the fractional study of the stomach gives exact information of every other portion of the gastric cavity is to fail to appreciate the limitation of nearly all clinical studies. The important point is that it gives exact information of the point determined on, and this it does if the technic is exactly followed. As Ryle puts it, a similar lack of appreciation of the object and limitations of the test can be ascribed also to the contention of Cole and Adie and of Kopeloff, who have urged the inadequacy of the usual titration method and the importance of the hydrogen ion and buffer salts in the estimation of gastric acid. The time and attention expended on such an accurate method would be out of all proportion to the results obtainable. Haneborg states that the curve of hydrogen ion concentration in fractional specimens follows the curve of free acidity as determined by titration procedures in a fairly accurate manner. Novvgaard, concerning the p_H estimation with titration, concludes that the titration procedures can still be recommended as being the most convenient method of determining any test meal studies that we possess today.

RATE OF DIGESTION

In a previous communication, we pointed out that there is a hypersecretory, isosecretory and hyposecretory normal type. Some of the studies, such as those of Bell, emphasize how constant and characteristic are the gastric secretory findings in health. Bennett and Ryle found the great majority of normal persons in the middle, recognizedly normal, group, and undoubtedly had we prepared these groups based on bread, cereals or gruels alone, our findings would have closely approximated those of Bennett and Ryle. However, our original studies were based on a wide variety of normal responses, and no one variety was considered in measuring these groups. Of 929 cases, 91.5 per cent. of the studies on fish showed an acidity of 100 or over; 76 per cent. of meat preparation, 44 per cent. of milk and cream preparation, 39 per cent. of pies, puddings and pastry, and only 7.3 per cent. of bread and cereal responses were in excess of 100. The latter agrees closely with the eight cases in 100 men shown by Bennett and Ryle, and in our studies it was apparent, as it is in theirs, that the estimation of motor work is highly characteristic for a given person and remains more or less persistently true to type. Disease alters type, and by altering type impresses its characteristic change on the individual.

Likewise it is apparent to us that there are, precisely as in the studies of Moody, Van Neys and Chamberlain, marked normal variations in motor function, and that these variations, considered within the range of health, remain more or less constant. I can say from more than 10,000 personal screen examinations of the stomach that nothing in my experience suggests the slightest criticism of that remarkable group of studies, but that I am firmly convinced that there are marked variations in the position and contour of the stomach in health, and that subsequent roentgenograms practically suggest the essential correctness of these findings. The same thing is true regarding motor function and evacuation, which can be exactly determined by fractional analysis.

We were clearly able to demonstrate in healthy men a normal "fast" and a normal "slow" stomach. From a motor standpoint, an analysis of 964 complete normal curves emphasizes the fact that there is a normal slow and a normal fast stomach measured by evacuation time. The normal fast stomach digests beets and raw cabbage and lettuce in a little over one hour; turnips and asparagus, in one and one-half hours; raw carrots, creamed celery, plain cucumbers and string beans, in between one and one-half and two hours; eggs, bread and cereals, around the two hour limit; hamburger steak, minced ham and medium roast beef, in two and one-quarter hours; lamb chops, rare roast beef, scrambled eggs and omelet, in two and one-half hours; roast lamb and pork, in between two and three-quarters and three hours; and ham, liver and bacon, sirloin steak and ham bologna in a little over three hours. The normal slow stomach will show a longer evacuation time for the simple vegetables. Roast beef, hamburger steak and fried eggs show an evacuation time of three hours or more, while roast lamb and medium roast beef show an evacuation time of three and one-half hours, sirloin steak and roast pork take nearly four hours, and pork chops and baked ham over four hours. The important point was that all foods of moderate quantity show no actual six hour retention in health.

It might be mentioned in passing that the foregoing findings regarding the hyperacid responses in various foodstuffs are a more or less characteristic type of finding in certain individuals. It is likewise interesting to note that which has already been discussed; namely, that a disappearance of all ulcer symptoms and evidence of ulcer roentgenologically with the so-called clinical cure is often followed by the same persistent high acidity, which can be explained only by the fact that this was the subject's normal type. It is likewise true that, all conditions being equal, his motor type remains more or less the same.

ADAPTABILITY OF THE STOMACH

The next point that impressed all of us (this work was carried out in the department of physiologic chemistry under the direction of Dr. P. B. Hawk and with the aid of a number of associates) was the extraordinary adaptability and resilience of the normal stomach. The dictum that the healthy stomach can digest "nails" is literally true when one sees the way in which this combined motor and secretory mechanism reduces foods of the most diversified nature to chyme. The stomach is the great organ of food preparation, and the antrum is the principal motor of the entire digestive tract. In a previous article we[2] spoke of the gastric equilibrium zone. There was emphasized what is clear to any observer, that acids, alkalis and fluids are all brought to an optimum in about forty minutes. Meunier pointed out a somewhat similar phenomenon from the study of the cryoscopic index. In a previous communication, I[3] was able to demonstrate clearly the acid regulatory mechanism of Boldyreff. Volhard and Lintoareff[4] found pancreatic enzymes in the stomach when fats were given. Ehrenreich, by technic much less delicate than ours, found trypsin in thirty-seven out of sixty-one cases. Ehrman and Lederers[5] found that considerable regurgitation occurred even with an Ewald meal. Azzovarisci[6] pointed out the absence of trypsin in seven cases in which there were disorders of the pancreas and ducts.

In our[7] studies on psychic secretion, the importance of the psychic secretion in healthy men was pointed out. Until that time I believed that probably the psychic stimulus controlled the first half of the digestive phase, but it was evident that in the absence of all psychic stimuli there was a continued normal secretion of from 5 to 60 c.c. or, on an average, from 30 to 60 c.c. an hour, which was apparently sufficient to initiate the digestive phase. Since then, I have repeatedly given what I call a chemical meal, namely, the injection of a meal through a tube with the tube held back of the patient, and convinced myself that the psychic secretion was not necessary to gastric digestion.

In our previous discussions on the subject we have covered the digestive and chemical phases of secretion. Today the gastric response, as I see it, can clearly be divided into two broad subdivisions—the fasting state or the interdigestive phase, in which a series of phenomena occur totally different from the second, or digesting, phase. All studies on the stomach clearly emphasize these two subdivisions, and newer studies show clearly the forces operating to produce these two divisions. Roentgenologically, we know much of the digestive phase and little of the interdigestive phase; clinically, we are slowly beginning to realize the importance of both phases and their perfect intercorrelation in health. Only with an understanding of these two phases are we in a position to interpret disease alterations.

It is now apparent that the fasting stomach is something more than an approximation of gastric walls. It represents the peristaltic function, a marked lessening in secretory velocity, probable relaxation of the pylorus, and increase in regurgitation, and with it periodic hunger contractions as well as smaller tonal contractions. It is never empty, and its contents are characteristic in health, and in many disease conditions quite characteristic.

The digestive phase is the response of the stomach to stimuli. It is highly characteristic in health and more or less constantly changing. It is precisely for this reason that no single observation can record the changes taking place in the stomach. It is even highly probable that different types of changes are taking place in the same organ. Certainly, it is now evident that in the hypotonic slow stomach some considerable time may elapse before the contents are homogeneous. The exact significance of this is not clear, but of this we shall have more to say in the future.

PHASES OF DIGESTION

As I see it, the digestive phase is clearly divided into three parts. The first is the period of adjustment or rise. This is the most unstable phase of all, in which poor admixture is emphasized. During this primary phase the phenomena of the interdigestive period are lost—the secretion increases in velocity and acidity, and there is a period of disequilibrium lasting from thirty to forty minutes or more. With the rapid increase of secretory velocity the pylorus is usually closed; the psychic secretion plays an important part, and the continued and psychic secretions initiate digestion. In this period, there is every attempt on the part of the stomach to reach equilibrium, both secretory and motor, as we pointed out in a previous communication, and even osmotic, as Meunier pointed out from the standpoint of studies on the cryoscopic index. It is the safe transit through this period into the more or less automatic second period that constitutes good and bad function. This period is by all odds the instable part of the gastric response. With vegetables and cereals, the adjustment is fairly rapid; with meats, it is much slower, as will be evident from a study of their responses.

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[2] Fowler, C C.; Spencer, W H, Rehfuss, M E, and Hawk, P B: Gastric Analysis, IV, The Gastric Equilibrium Zone, J A M A **77**: 2118 (Dec 31) 1921

[3] Rehfuss, M E: Duodenal Regurgitation, Am. J Physiol **39**: 459 (Feb) 1916

[4] Volhard and Lintoareff: Diss, St Petersburg, 1901

[5] Ehrman and Lederers Deutsch med Wehnschr **25**: 879, 1909.

[6] Azzovarisci: Gazz med ital **61**: 371, 1911

[7] Rehfuss, M E, et al Gastric Response to Foods Psychic Secretion of Gastric Juice in Normal Men, Am J Physiol **52**: 1 (May) 1920

The middle, or second, phase is the digestive acme or full tide of gastric digestion. In this period, motor and secretory function are at their height; the normal optimum is reached and is readily recognizable with all foods regardless of their nature or chemical composition. One French observer asserts that it is an adjustment of 0.35 Hayem. It probably represents, from studies on intragastric conductance by Dr. Bergheim in our laboratories, the highest period of dissociated free hydrochloric acid, and therefore, from a chemical standpoint, the most effective in gastric digestion. The acme naturally depends on digestive tone and is shortest for cereals and vegetables and longest for meats, particularly pork products. In disease, this period may be enormously prolonged.

The terminal, or third, phase is normally the stage of decline, and from the point of view of pathology, one of the most important in gastric digestion. It represents a falling off in secretory velocity and acidity and the gradual resumption of the interdigestive phase with an increasing tendency to duodenal regurgitation, attesting to relaxed pyloric tonicity. With it is a resumption of peristaltic function and an approximation of the gastric wall. One can argue at will, but normally, from many observations of different types of normal subjects, the terminal phase of the digestive period should register a decline with a gradual appearance of all the phenomena of the interdigestive period. This is the ideal normal. Notice the rapid decline with vegetables and the slow decline with meats. It is interesting to note how predominatingly vagus the digestive period appears to be, and how predominatingly sympathetic the interdigestive period seems. While our experiments have had to do only with actual intragastric conditions, it is permissible to surmise that in some way this interchange might be associated with alternate groups of stimuli, and what naturally follows would be the effect of disease processes, both intragastric and extragastric, on these stimuli.

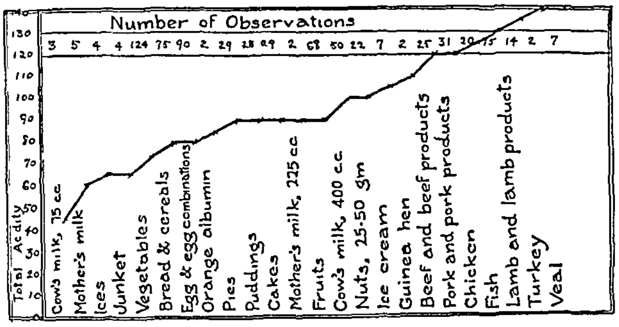

Chart 1.—Average highest total acidity with various foods.

CONCLUSION

Gastric analysis is simply the measure of gastric work. It is the physiologic study of the stomach, as the roentgen ray is in a sense the anatomic study of the organ. It attempts to measure the ability of the organ to perform its function.

The accompanying charts represent the work of the entire department over a period from 1913 to 1922. Some of these have as yet not been published, but they express in a general way the gastric reaction to a wide variety of foodstuffs. In carrying on the technic for these findings I placed the tube in one position and kept it there. I have repeatedly screened the tube in position, and in more than 95 per cent. of cases the tube was at or near the antrum, which is undoubtedly the most favorable position for reviewing changes that occur in the stomach. Regarding these various phases, we shall have more to say in the future. The important point, however, is that if these criticisms were merited it would not have been possible to obtain the high and continuous findings which we obtained with, for instance, the meat group and certain other groups which were markedly constant when repeated at intervals. I would emphasize the close association of the stomach with many other organs in the body and the fact that it cannot be considered as simply an organ that is more or less a "mill" or a "fermenting vat," or a "stew pan," as some one has said, but essentially an organ highly organized and intimately associated with the other parts of the digestive tract and capable of a degree of coordination that we at present are only beginning to realize. The finer points in gastric variations have been only touched on, and it can be confidently hoped that the future will reveal many points concerning which we are still entirely in ignorance. I look forward to great changes in the study of the physiology of the pylorus and also to future means of more accurately interpretating the changes that occur in the stomach. Probably more than anything else, a study of the normal organ reveals its extraordinary adaptability to all varieties of contents and its intolerance on the approach of disease.

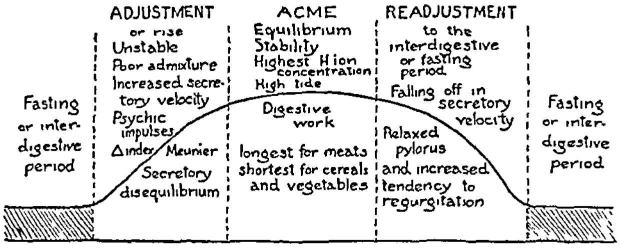
ADJUSTMENT
or rise
Unstable
Poor admixture
Increased secretory velocity
Psychic impulses
Δ index Meunier
Secretory disequilibrium
ACME
Equilibrium
Stability
Highest H ion concentration
High tide
Digestive work
longest for meats
shortest for cereals and vegetables
READJUSTMENT
to the interdigestive or fasting period
Falling off in secretory velocity
Relaxed pylorus
and increased tendency to regurgitation
Fasting or interdigestive period
Fasting or interdigestive period

Chart 2.—Conception of the digestive period.

ABSTRACT OF DISCUSSION

Dr. Seale Harris, Birmingham, Ala.: Dr. Rehfuss' observations seem to indicate that his former views of digestive ulcer were based on the wrong ideas. It is a modification of the Lenhart idea. He believed that the protein would bind the gastric secretion and thereby lessen this secretion and lessen irritation of food on the ulcer. Dr. Rehfuss seems to have proved that this is a wrong conception and it seems probable that the conception of Cohnheim as to pain in gastric ulcer might be correct.

Dr. Frank Smithies, Chicago: In 1916, when I called attention to the fact that most of the diets for ulcer were unphysiologic and I abandoned the use of meat, cream, eggs, etc., and substituted for them a high carbohydrate diet with the absence of alkaline feeding, I was looked on as almost an anarchist. Since then, evidence has accumulated in our laboratory and the laboratories of others that what we have to deal with in ulcer, are the following: First, there is a distinct tendency to delayed excretion of material from the stomach. Therefore it would seem that the introduction of foodstuffs which normally occupy the least time in going through the stomach or being acted on in the manufacture of chyme would be a certain advantage in putting a damaged stomach to less stress. Secondly, as Dr. Rehfuss has shown here, the tendency of the stomach to restore what might be for it a normal, has been clearly demonstrated in the ulcer treatment, namely, if large volumes of alkali are administered, or one has to look on their reception as the reception of foreign constituents, unlike food, and that the response of the stomach is to restore a normal; hence, a great quantity of alkali brings about on the part of the stomach a defensive response. Dr. Rehfuss' curves have very well shown that this condition actually exists. They also make evident that if an individual is to be fed a 70 or 80 per cent. protein meal, as is common in ordinary ulcer treatment (milk, meat, eggs, etc.), we introduce a material which tends to the production of more acid, a very undesirable thing. If, next, one introduce a great quantity of alkali to keep up continuous alkalinity, at once he produces physiologic and chemical incompatibility. The material introduced requires acid for digestion, but if alkali is provided in high doses, it is not possible to digest that food. It follows, then, that, to make an individual comfortable, the stomach must rapidly be evacuated of this unphysiologic mixture by a stomach tube. In the treatment of ulcer suggested in 1916, we advanced a "physiologic rest" method. This is not only an attempt to control the secretory action of the stomach, but an attempt to quiet motility, thus giving the ulcer-bearing area an opportunity to repair itself. I think today's papers, particularly the observations of Carlson and of Ivy, have substantiated what we advocated in 1916, which clinically has not yet received general recognition.

Dr. Martin E. Rehfuss, Philadelphia: Dr. Smithies brought up the interesting question of diet in ulcer, which of course is an important one. I myself am not convinced that acid of itself produces an ulceration. On the other hand, if the mucous membrane is in any way devitalized, then the acidity becomes probably one of the most important, if not the most important, factor in producing chronicity. I remember years ago when Bolton produced ulcer with gastrotoxic serum. He believed at that time that the serum was more or less specific in its ulcer producing effect, but we produced lesions of a similar nature with toxic substances. Rosenow's have exactly the same appearance. What probably happens is a terminal devitalization and subsequent digestion of the mucous membrane. It would then follow that foods which kept up the largest amount of acidity ought to produce or keep up ulceration. On the other hand, foods producing relatively little acidity ought to produce the opposite effect. I was very much interested in hearing Dr. Carlson speak of meat. It fitted in exactly with our experiments. Meats as a whole produce a secretion of very high acidity. We have demonstrated at the laboratory of physiologic chemistry of Jefferson Medical College the very high acidities encountered with lamb, beef and pork.

Radiology and Surgery.—In connection with gastric disease it is hardly too much to say that we owe almost everything to the radiologist. As we look back on the history of gastric ulcer in respect to its symptoms, its diagnosis, and its treatment, we must now realize that before the radiologist came to the rescue there was little that could meet with our confident acceptance. I do not doubt that more errors have been made in the diagnosis of gastric ulcer than of any other disorder. Its symptoms are mimicked with so much accuracy by other diseases that it is not only the unwary who are deceived. The radiologist has put all this right, or nearly right, and has, I think, explained the cause of the so remarkable plagiarism by those other diseases which arouse gastric symptoms. It is, however, not only diagnosis that has been at fault, but also the treatment that has been based on it. How can we explain the devotion of physicians to the alkali treatment of gastric ulcer except on the assumption that the diagnoses on which such methods first were founded were erroneous?—Moynihan, Berkeley: *Brit. M. J.* **2**:48 (July 11) 1925.

LOWERED FERTILITY IN THE MALE *

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[Editorial Note.—This paper and the papers of Drs. Baker and Vecki, which follow it, constitute a symposium on urologic subjects.]

It is not the purpose of this paper to discuss the subject of male sterility.. The absolute sterilities that follow gonorrheal epididymitis or the orchitis of mumps, or other definite pathologic conditions, are well known and need little amplification. It is not so well known, however, that there are lesser variations in fertility which are more in the nature of functional disorders, and which are therefore more susceptibile of improvement.

For some reason or other, physicians have always regarded the fertility of the man as above reproach. It is now beginning to be recognized that the man may be just as much at fault as the woman in accounting for a given sterile marriage; but there still remains the mistaken notion, "Once fertile, always fertile." In other words, there is a rather widespread idea that fertility, like height, is a fixed and unalterable characteristic of a given individual. Nothing can be further from the truth. Fertility is a most variable quality. It varies with race, climate, diet, state of bodily and muscular health, disease and age—and to an even greater extent with use and abuse. Our knowledge of these matters is still far from complete, and as yet there are few exact studies on which to base a rational procedure in treatment. The observations and practices of the animal breeders, which might be turned to good account, are largely empiric. The main fact of the *variability of fertility* is, however, well known to them as the sort of practical fact that means dollars and cents. They have long realized that such mistakes as a poor ration, too hard or too little exercise, or overuse as a breeder may ruin an otherwise excellent animal. These various factors all obtain with man; in fact, rather than being of less they are probably of greater importance, and in addition there are psychologic and other influences that are rarely seen with the lower animals.

Our conception of human fertility, then, is that it is an index of the functional capacity of the reproductive system. In the male at puberty it rises rapidly from zero toward 100 per cent., and in normal cases is maintained at this high level throughout early manhood. With middle age, however, it naturally begins to fall off, until at 50 or 60 the fertility of most men is so low that reproduction is impossible.

In addition to this larger curve of variability, male fertility is also subject to minor ups and downs. For instance, we have evidence that a prolonged febrile attack such as typhoid will cause a marked reduction, and there is evidence that the chronic toxemias from focal infections may have a similar, though less pronounced, action. But perhaps the most important cause of variation from day to day is to be found in the degree to which the organs are called on to function. Overuse is sure to cause a temporary reduction in male fertility even to the point of sterility, and constant overuse may cause permanent damage.

Thus far I have discussed the biology of fertility. I now wish to say a few words about certain minor pathologic lesions of the genital tract in the male and their effect on fertility. In defining the scope of this paper,

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* Read before the Section on Urology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

I purposely excluded pathologic lesions of such severity as to produce absolute sterility. I shall also exclude—as already well understood and needing little further emphasis—the whole subject of gonorrhea.

The conditions to which I refer are the nonvenereal inflammations of the genital tract. They occur chiefly in the prostate or the seminal vesicles or both, and are a frequent cause of lowered fertility. They are as a rule quite without symptoms; and the diagnosis depends on the finding of a boggy prostate with pus in the expressed secretion. When the vesicles are involved there is often tenderness, and they are more easily palpated than with normal functioning organs. This whole subject of the nonvenereal infections of the male tract is a most important one and deserves more careful consideration than I can accord it at this time. I merely wish to present it as one of the chief causes of lowered fertility.

Fertility being, then, a variable quantity, it becomes doubly important to be able to estimate it with some degree of accuracy, since this will assist us materially in diagnosis and treatment. Such an estimation can be made only after compiling the results of a careful study of the individual patient, and in this the history plays an important part. In taking the history one should, of course, inquire about infections, both general and local, such as typhoid or tuberculosis on the one hand, and gonorrhea or mumps on the other; but in the majority of cases the history of the habits of the patient is likely to yield information of even greater value. The habits that are most important in this connection are sex, exercise, occupation and food habits.

It would require much more time than is here available properly to discuss this question of sex habit in its various manifestations. Under the circumstances, the barest outline must suffice. For instance, some of the points to be brought out on questioning as to sex habits are excessive masturbation, long engagements with undue sex stimulation, overfrequency in married life, and the employment of unphysiologic methods of preventing conception. The point to be stressed here is not that any one of these errors in sex hygiene is necessarily very harmful in itself, but that it is the excessive indulgence in any one of them that leads to chronic congestion and in the end to low fertility.

In the same way the patient is cross examined in regard to his exercise, occupation and food habits. As a result of such an inquiry it is found that many of these patients lead sedentary lives, take little or no outdoor exercise, and often eat the wrong kind of food. We all know that sedentary habits are bad and that neither our bodies nor our minds work at their maximum efficiency under such conditions. Often the effect on fertility is slight or hardly to be demonstrated. The conditions of which I speak are so widespread that it seems as if more sterility should be produced if they are seriously to be considered as reducing fertility. The probable reason that the race is remaining as fertile as it still is under the almost universally adverse circumstances of modern life is not, however, that the circumstances are not adverse, but rather that man's inherent fertility is so great that in most instances it persists in spite of them. There can be no question, however, that fertility does suffer—one has only to consult the statistics of the falling birth rate.

After briefly sketching in some of the more salient points in the history, we come now to the examinations, both general and local, that should be made in a given case. It goes without saying that every patient should receive a general physical examination if only to rule out some of those more general diseases, such as tuberculosis, syphilis and diabetes, which may be factors in the lowering of fertility. I need not give the details of the local examination. My only caution is that it should be as complete as possible in the best interests of the patient. I am not here dealing with the use of such special instruments as the cystoscope or endoscope, but rather with those examinations which, because of their routine nature, are sometimes overlooked. For instance, it is important to note the consistency of the testes as well as their size. Lack of the normal feeling of elasticity is a fairly accurate sign of reduction in function. Examination of the prostate and seminal vesicles presents few difficulties. I would merely urge that it should never be considered complete until some of the secretion from each has been obtained by massage and thoroughly studied in the gross and under the microscope. For this to be successful, it is necessary that the bladder be at least moderately distended. There is no danger that the secretions from prostate and vesicles will become mixed, as that from the latter usually passes back into the bladder and can be recovered from the urine. The urine passed after massage is to be inspected for prostatic shreds and to see whether any vesicular secretion is present at the bottom of the glass, where it falls almost at once.

Normal prostatic secretion is watery and quite free from mucus. The chief thing to be looked for is the presence or absence of pus. Pus may often be seen as tiny white flecks which under the microscope prove to be large clumps of leukocytes. Often it is so thoroughly mixed with the secretion as to be indistinguishable to the naked eye. In that case the microscope alone discloses its presence. Mucus must also be considered abnormal. Occasionally spermatozoa are seen and rarely true prostatic concretions. If the heavy vesicular secretion is found at the bottom of the urine glass, it also should be looked at under the microscope. As yet we have no very definite standards of comparison by which to judge whether a given vesicular secretion is normal or not, though the finding of secretion in any amount must be considered distinctly unusual. If, as is sometimes the case, such secretion contains a great many dead spermatozoa, it would seem to be evidence of abnormally long retention—and to that extent of improper functioning.

It will be seen that information of much value can be obtained from a study conducted in this way, but an opinion based on these facts alone is worthless as far as an estimation of fertility is concerned without a study of the semen itself. This is important for several reasons. One is that here we are able to examine the actual sex cells themselves and to ascertain their behavior under various conditions in the environment; and a second is that this examination of the semen often brings to light conditions that were not otherwise even suspected.

EXAMINATION OF SEMEN

There are several methods of obtaining a specimen of semen, but there are serious objections to most of them. To be of any value, the specimen must be reasonably fresh—best not more than one hour old and be brought in at body temperature. It should be understood, however, that there is more danger of injury to the spermatozoa from even slight overheating than from a much longer chilling. Specimens as usually seen are brought in in a condom suspended in warm water. In addition to the danger of overheating just mentioned, this method is open to the objection from the use of the condom itself. These articles are manufactured by coating a form with rubber dissolved in benzene. When purchased, they are coated with a talc powder which has absorbed some of the benzene. This powder has a definitely poisonous action on the spermatozoa, and its presence will therefore vitiate any examination as to viability. The method that I have finally adopted as most satisfactory and open to the fewest objections is the following: The patient is directed to withdraw just before the orgasm and to ejaculate into a clean, dry, warm bottle. This bottle should be of 1 or 2 ounce capacity with a wide mouth, and be fitted with a tight cork. It must constantly be kept in contact with the body and brought in as soon as possible, being carried in the axilla next to the skin.

The semen is inspected and examined under the microscope in much the same way as was described for the prostatic fluid. Here, too, the presence of any mucus or pus is regarded as abnormal. We are in the habit of recognizing two different kinds of mucus in the semen, one of which we believe comes from the inflamed prostate and the other from trouble in the vesicles. The first type is thin and does not string out to any great extent. It appears to be analogous to the mucous shreds seen in the urine passed after massage. It can be detected under the microscope as an area in which spermatozoa tend to become entangled and killed, so that in time there may appear to be a clumping of them. The other type of mucus is much heavier and more tenacious. Often practically the whole specimen can be strung out if grasped in forceps. I feel that this type is vesicular in origin because of the physical impossibility that such heavy mucus could pass through the small prostatic ducts and because when it is found in the semen we usually are able to demonstrate trouble in the vesicles on palpation.

The next procedure is to examine a given specimen under the microscope. The presence of mucus or pus is checked up and a careful study made of the spermatozoa. In the first place, the number per cubic millimeter is counted; this varies from an average normal of 75 to 125,000 downward. The average number for the whole specimen under normal conditions is probably three or four to five hundred million, though I have seen one specimen that totaled more than a billion; and when the fertility is low the count may be anything from two to three hundred million down to zero. Such counts are exceedingly valuable in estimating fertility, and are of the greatest assistance in checking up the effect of treatment. When the number of spermatozoa has been determined, the percentage of them alive is also recorded. Then the quality of motion and the frequency of defective cells are observed. There is one other test which is extremely valuable in this work, and that is the determination of the vitality of the spermatozoa. This is easily accomplished by seeing how long they survive an exposure to room temperature. Normal specimens will show progressive motion in the majority of the sperm for an hour or more.

Time forbids that I should at this time go into further refinements of diagnosis, but the main points have been outlined and enough has been said to indicate that a very considerable body of data can be accumulated in a given case. When these facts are brought together and digested, all of them being utilized, whether from history, general examination or study of the various secretions, a very fair estimation of the degree of fertility can be made, and from this a rational treatment outlined.

REPORT OF CASES

To illustrate a few of these various points I shall give the synopses of two typical case histories with the results of the examinations, opinion as to fertility, the treatment outlined and the effect of that treatment.

Case 1.—A man, aged 32, had been married three and one-half years. Six months before marriage he had had a severe scarlatina with mastoid involvement and had been sick for three months. There had been no venereal infection. His wife had had a questionable miscarriage about five months after marriage; otherwise, no pregnancies. The patient was rather high strung, but examination was normal. His wife was normal. While under treatment a second pregnancy occurred but did not develop normally, and pathologic examination of curettings showed degenerate villi. The spermatozoa were normal in number, but the percentage alive was not more than half, and there were many showing morphologic changes. The treatment in this case included a long vacation, increase in exercise, and the taking of a stimulative diet. After about six months the wife conceived again and is now about six months pregnant.

Case 2.—This is similar, but in this instance the fertility had been much lowered by the development of a vesiculoprostatitis. The patient was seen in 1918 at the age of 33, and had been married five years. He had not had venereal disease. Physical examination was normal. He had been a college athlete, but had dropped all exercise when he married. His wife did not conceive until he had temporarily taken up hard training again. This pregnancy went through normally. Then came the war, with long hours, no exercise and poor diet. Examination of the semen when first seen showed a marked reduction in the number of spermatozoa, and rectal palpation disclosed the presence of tender, distended vesicles and a boggy prostate. For some reason this patient was unable to carry out treatment. He has recently returned and is now having regular massage of the vesicles and prostate, in addition to a proper diet and plenty of exercise. The prognosis is less hopeful in this case because of the longer duration and the fact that he is now 40; but it illustrates the effect of a nonvenereal infection in lowering fertility.

CONCLUSION

I wish to emphasize the importance and frequency of low fertility in the male and to urge the value of careful study in each case. Such a study must include a thorough microscopic examination of the secretions and of the spermatozoa as well as palpation and inspection of the organs. It is to be supplemented by an exhaustive inquiry into the habits of the patient's life, with particular reference to those of sex. It is only on the facts accumulated in this manner that a satisfactory opinion as to fertility and a rational plan of treatment can be outlined.

321 Dartmouth Street.

Effect of Social and Economic Conditions on Prevention and Cure.—Successful medical treatment often depends on the physician's recognition of the influence which the patient's personality and his social and economic conditions have on prevention and cure. The patient requiring modification of mode of life, as well as medication, may need social diagnosis and treatment in order that medical treatment may fulfil its purpose. These factors, too often disregarded, need to be recognized by the physician in dealing with his patient.—*Hosp. Social Service* **12**:136 (Sept.) 1925.

PROSTATITIS OF NONVENEREAL ORIGIN *

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By prostatitis—including seminal vesiculitis—of nonvenereal origin, I mean prostatitis in which the gonococcus can be eliminated as a causative agent.

Although this form of prostatitis has long been recognized by urologists, there seems to be a general lack of understanding regarding its nature and frequency.

The importance of its recognition lies in the fact that it may be, and indeed frequently is, mistaken for a gonorrheal infection, even though the gonococcus cannot be demonstrated. This is shown by the hesitation or frequent unwillingness of insurance companies, workmen's compensation boards and the Veterans' Bureau to grant indemnities for inflammatory diseases of these structures. The disaster that such a mistake in diagnosis may cause to a man's domestic happiness need only be mentioned. Furthermore, the mental anxiety, often leading to marked depression, which many patients, absolutely innocent, are made to suffer by the impression that they have a disgraceful ailment, is not to be considered too lightly.

My purpose in this paper, therefore, is to call attention to the frequency of nonvenereal prostatitis, and to discuss its etiology and other important points.

FREQUENCY

A review of the literature gives very little information regarding the frequency of nonvenereal prostatitis and vesiculitis compared to that caused by the gonococcus. In a study of 358 cases of chronic prostatitis, Young[1] found that 25 per cent. of them were undoubtedly due to other than venereal origin. White and Gradwohl[2] found that in 20 per cent. of 1,000 cases the gonococcus could not be found on culture, although in 10 per cent. of these negative cases serologic tests for gonococcus infection were positive. This would indicate that about 18 per cent. of their 1,000 cases were of nonvenereal origin. Of a series of thirty-four cases of chronic prostatitis in which Culver[3] obtained positive cultures (none of which showed gonococci), seven cases, or 20 per cent., gave no venereal history. G. G. Smith[4] recently reported forty cases of nonvenereal prostatitis seen during a period of four years, but he does not mention the relative proportion this number represents to the veneral cases seen during the same period.

My own sixty-four cases of nonvenereal prostatitis represent 15 per cent. of all cases of prostatitis seen in private office practice only. From the total have been excluded all cases of prostatitis secondary to stricture and to operations on the urinary tract. It may therefore be reasonable to assume that nonvenereal prostatitis and vesiculitis represent from about 15 to 20 per cent. of all cases of this disease. Among dispensary cases of the disease, this percentage would most likely be lower.

SYMPTOMATOLOGY

The symptoms of nonvenereal prostatitis differ in no respect from the venereal form of the disease, except, perhaps, that the disease may be dormant for a long time without causing subjective symptoms, and may be discovered only because of slight pyuria found during the course of a general examination. This was noted in ten of my cases. Urethral discharge, which would cause the greatest suspicion of gonorrheal infection, was observed in fourteen cases. Pyuria, microscopic or gross, was present in all cases. Frequency of micturition (twenty-one cases), dysuria (seventeen cases), and pain in the lower back and perineum (fifteen cases), were the most common symptoms, either alone or in combination. Hematuria of the terminal type was noted in four cases; marked sex dysfunction in five cases. A prominent feature of many of the cases, and one common in all forms of prostatic disease, was the psychoneurotic element, which varied from vague apprehensiveness and anxiety to extreme melancholy, one patient having committed suicide even after the prostatic infection had apparently cleared up.

Of my sixty-four patients, thirty-seven were over 40 years of age, and of these, thirteen, or 20 per cent., were over 50, including two aged 72. A considerable number of cases, therefore, were seen in men who had reached the age when bladder symptoms would lead one to look for adenoma or malignancy of the prostate. Forty-five patients were married men with healthy families.

COMPLICATIONS

Epididymitis, which was bilateral in three cases, developed during the course of the disease in eight. Each case was treated by incision and drainage according to the method recommended by Hagner,[5] and tuberculosis was ruled out by every test.

Pyelitis was a complication in nine cases (14 per cent.). The high incidence of this complication in nonvenereal cases when compared to its rarity in the more common gonorrheal infection of the seminal vesicles is noteworthy. The question whether the renal infection is due to obstruction of the ureter by the swollen vesicle, or to blood borne infection from distant foci, or whether the prostate and vesicle infection is of the descending type (secondary to renal infection) might be difficult to answer.

Mark and Hoffman[6] report three cases of renal retention due to the vesicles obstructing the lower ureters, and cite other cases in the literature. White and Gradwohl[2] speak of this condition as being frequent. In only one of my cases was there definite obstruction of the lower ureter, catheterization being easy in the others, no renal retention being shown, and clearing up rapidly with renal lavage. Arthritis was a complication in eight cases, mild in six and severe in two. Iritis was observed in one case.

PATHOLOGY

The gross pathologic findings in nonvenereal prostatitis, like the symptoms, do not differ markedly from what one finds in the venereal type of the disease. The prostate and the vesicles may feel quite normal on pal-

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* Read before the Section on Urology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] Young, H. H.; Geraghty, J. T., and Stevens, A. R.: Chronic Prostatitis—An Experimental and Clinical Study, with an Analysis of Three Hundred and Fifty-Eight Cases, Johns Hopkins Hosp. Rep. **13:** 313, 1906.

[2] White, E. W., and Gradwohl, R. B. H.: Seminal Vesiculitis—A Serological and Bacteriological Study of One Thousand Cases, J. Urol. **6:** 303 (Oct.) 1921.

[3] Culver, H. B.: A Study of the Bacteriology of Chronic Prostatitis and Spermatocystitis, J. A. M. A. **66:** 553-557 (Feb. 19) 1916.

[4] Smith, G. G.: Non-Specific Infection of the Prostate and Vesicles, Boston M. & S. J. **189:** 495-503 (Oct. 11) 1923.

[5] Hagner, F. R.: The Operative Treatment of Acute Gonorrheal Epididymitis, M. Rec. (Oct. 13) 1906, p. 565; Ann. Surg. **48:** 876, 1908.

[6] Mark, E. G., and Hoffman, R. L.: Renal Retention Due to Seminal Vesiculitis, J. Urol. **8:** 89 (July) 1922.

pation (ten cases), or may present various grades of diffuse or localized swelling and induration. Pus is found in the expressed secretion of all cases; but it may not be noted in excess until after several massagings, as has been pointed out by Young.[1]

The induration of the prostate may be so hard as to suggest malignancy, especially in men past middle life who complain of dysuria. The sudden onset of the symptoms, especially if with fever, the absence of the characteristic stony hard induration of cancer, and the softening of the gland within a short time after proper treatment, should clarify the diagnosis. This type of prostate was noted in three of my cases.

Abscess of the prostate was found in six cases; in three of them, the prostate, by rectum, was only slightly enlarged, but very hard and tender. In the three cases, the cystoscope showed a large intravesical projection of the abscess causing almost complete retention.

The relation of nonvenereal prostatitis to prostatism and prostatic hypertrophy is of considerable importance. Kretschmer [7] emphasizes that abscess of the prostate in elderly men may be mistaken for hypertrophy, and that abscess associated with hypertrophy may be difficult to detect. This difficulty was demonstrated by the case of a man, aged 77 (not included in the sixty-four cases), from whom I removed, with no difficulty, a perfectly benign looking prostate which, on section, was found to contain an abscess the size of a hickory nut deeply embedded within one lobe. The patient developed a fatal septic pneumonia on the third day. Such cases are, without question, of most serious significance, and immediate and rigorous measures should be taken to combat the infection.

Boyd [8] and Rathbun [9] have recently called attention to the rôle played by infected seminal vesicles in the persistence of severe pyuria and bladder irritation following prostatectomy. Rathbun concludes with this statement: "I believe, too, that a proper appreciation of this lesion as a possible factor in the problem of prostatism may save an occasional case from the danger and discomfort of a major operation."

In seven of the patients in my series, whose ages varied from 55 to 72 years, the duration and character of the symptoms, together with rectal and cystoscopic findings, seemed to indicate benign prostatic adenoma of a minor degree. The large amount of pus in the prostatic secretion and the marked tenderness of the gland in each case led to conservative treatment, which resulted in complete relief of symptoms and reduction of the glandular enlargement in all except one case. This patient continued to have 150 c.c. of residual urine (which had cleared of pus), due to a small median bar. The bladder wall was quite trabeculated. Consequently, in spite of remaining infection in the prostate, the median bar was successfully removed by Young's punch; but for the following two days there was an alarming febrile reaction with chills.

BACTERIOLOGY

Cultures on agar and coagulated serum were made from the prostatic and vesicular secretions in forty-seven cases, and of these there were thirty-one positive results. In many of the cases, repeated cultures were taken. The following bacteria were thus recovered: *Staphylococcus albus* alone, five cases, and with *B. coli*, three cases; *Staphylococcus aureus* alone, five cases, with streptococci, one case, and with a diphtheroid bacillus, one; *Streptococcus viridans* alone, five cases, and with other organisms, six cases; a diphtheroid bacillus was found alone in one case; the *B. coli* group pure, in three cases, and *Micrococcus catarrhalis* pure, in one case.

In all of the sixty-four cases, search for the gonococcus was carefully and repeatedly made by stained smears of the liquefied and centrifugalized prostatic secretion, and from the sediment of the first urine.

ETIOLOGY

From the anatomic position of the prostate and vesicles, it is evident that infection can reach these structures by one of three routes: (1) by way of the urethra; (2) by direct extension through the rectal wall, and (3) by way of the blood stream and lymphatics. The normal anterior urethra is constantly inhabited by harmless organisms, especially the white staphylococcus and *Micrococcus catarrhalis;* but the posterior urethra is normally sterile. In the absence of trauma, or the occurrence of a badly treated nonspecific anterior urethritis, it is inconceivable that the prostate should become infected from this source.

Attention has recently been called to the rôle of rectal lesions in prostatic infections.[10] But here we must carefully consider the strong barrier supplied by the strong fascia of Dénonvillier, which covers the rectal surface of the prostate and vesicles. Blood borne infection of the prostate and vesicles from distant foci and during the course of infectious febrile diseases has not received as much attention as it should.

Bugbee [11] reports five cases of prostatic abscess definitely due to influenza, and in one case the bacillus of influenza was found in the prostatic pus. Kretschmer [7] calls especial attention to the metastatic type of prostatic infection and cites eight personal cases. Shea [12] noted seven cases of prostatitis and vesiculitis in which the primary foci were definitely located: teeth, two cases; tonsils, 3 cases; intestinal tract, one case, and carbuncle, one case. He emphasizes the importance of the blood stream and lymph channels as portals of entry. White and Gradwohl [2] say: "Many of our rheumatic cases gave a negative specific history, absolutely denied neisserian infection, nor could the gonococci be demonstrated by any fixation of complement test or cultural methods, at our disposal. These cases frequently came to the urologist as a last resort after having had other sites of pus collection eradicated." This statement deepens the impression in my mind that many cases of prostatitis, although due to focal infection, may continue to be the source of general disturbances, and must be treated in an appropriate manner. Smith and Morrissey [13] found marked infection of the teeth, tonsils and less frequently of the intestinal tract in association with prostatitis in psychopathic patients. Randall [14] has reported eight cases of nonvenereal abscess of the prostate.

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[7] Kretschmer, H. L.: Abscess of the Prostate, Surg., Gynec. & Obst. **32:** 259-268 (March) 1921.

[8] Boyd, M. L.: Seminal Vesiculitis After Prostatectomy Due to Infection with Micrococcus Catarrhalis, J. Urol. **10:** 387 (Nov.) 1923; Seminal Vesiculitis After Prostatectomy, Surg., Gynec. & Obst. **38:** 317 (March) 1924.

[9] Rathbun, N. P.: Seminal Vesiculitis as a Complication of Prostatism and Prostatectomy, Surg., Gynec. & Obst. **40:** 214-217 (Feb.) 1925.

[10] Brooks, Wilson and McGrath; Motz, and Vogel, quoted by Kretschmer (Footnote 7).

[11] Bugbee, H. G.: Infections of Genito-Urinary Tract Complicating Influenza, J. A. M. A. **73:** 1053 (Oct. 4) 1919.

[12] Shea, D. E.: Seminal Vesicles in Arthritis, J. A. M. A. **82:** 274-280 (Jan. 26) 1924.

[13] Smith, F. W., and Morrissey, J. H.: J. Urol. **9:** 537 (June) 1923.

[14] Randall, A.: Abscess of the Prostate, Ann. Surg. **71:** 172 (Feb.) 1920.

In my series of sixty-four cases, distant foci of infection or one of the acute infectious diseases were found to be so closely related to the onset or to the persistence of the disease as to be considered very important etiologic factors in thirty-three cases. A noticeable feature of many of these cases was the tendency for the prostatic symptoms to flare up with each recurrence of the focal symptoms.

Eradication of distant foci of infection done in eleven cases resulted in the prompt disappearance of the prostatitis in five, and very marked improvement in five. The remaining patient, from whom six badly abscessed teeth were removed, and with prostatic secretion negative on culture, died of cardiorenal disease six months later. Of the ten cases, it is interesting to note that the streptococcus was found in the prostatic secretion in seven. The following case is an excellent example of this group:

P. F., aged 28, married, in July, 1914, first complained of a slight urethral discharge and pain in the perineum. There was no history of venereal infection or recent exposure.

The patient looked healthy and was intelligent. There was a slight opalescent discharge from the urethra, which showed an occasional gram-positive coccus. The prostate and vesicles were slightly swollen, firm and tender, and the secretion was loaded with pus containing a gram-positive coccus. Repeated search for gonococci was negative. Two months of treatment apparently cleared up the infection; but during the following eight years, he had frequent relapses. Finally, in January, 1922, culture was made of the prostatic secretion, which showed *Streptococcus viridans.* Roentgenograms owed two badly abscessed teeth. These were removed at and immediate cultures from the roots showed *Strepto- cus viridans* and a small gram-negative bacillus. The ton- ils, also found to be infected, were removed. Six weeks later, with no further treatment, the prostate had become free from infection and has remained healthy since. During the three months following removal of infected foci, he gained 20 pounds (9 kg.).

Nine cases in which definite foci of infection were found but not removed (the patients refusing) showed: teeth, three cases, and tonsils, six cases. Of these, three were apparently cured; two were improved, and four patients continued to have recurrences. Other etiologic factors were: gout, one case; prolonged constipation, one; a previous attack of typhoid, one (*B. coli* and streptococci found in the prostate and right kidney), and one case developed following an appendical peritonitis, and was complicated by a *B. coli* pyelonephritis and epididymitis. In four cases the prostatitis developed during or just following an attack of influenza and yielded to local treatment. In two of these, the prostatic secretion was sterile: the remaining two were complicated by pyelitis, in one of which *Staphylococcus aureus* was obtained from the kidney and prostate; in the other case, the bacteriologic report was lost.

Of six cases of prostatic abscess, two occurred within ten days of furunculosis; one occurred three weeks following a severe phlegmon of the foot, and a fourth case several days after a stitch abscess in an abdominal incision. *Staphylococcus aureus* : pure culture was obtained from the abscess in eac A fifth case developed during the course of prostatitis associated with a streptococcus i the maxillary and ethmoid sinuses, *Strepto dans* and *Staphylococcus albus* being obtain prostatic secretion.

Of the remaining twenty-one cases, in te focal infection was not looked for, the etic protatitis remained obscure.

DIAGNOSIS

The diagnosis of nonvenereal prostatitis depends entirely on our ability to rule out gonococci as the original cause. Their presence is easily detected in cases of recent development; but in chronic cases, they are extremely difficult to find, even on culture; and negative cultures for gonococci mean nothing when taken alone. In venereal prostatitis, the secondary invaders, wherever they come from, very soon supplant the original invaders, and take possession of any culture mediums one may use.

The statement of intelligent men, holding responsible positions in life, and who come to the physician to be cured, can usually be accepted as true. In their desire to get well, these patients cooperate most freely with our efforts to help them, and seldom hold back any information.

I therefore believe that a prostatitis, developing in a man of high character, who repeatedly states that he has had no venereal infection, and in whose prostatic secretion gonococci cannot be demonstrated, is undoubtedly of nonvenereal origin.

CONCLUSIONS

1. Prostatitis of nonvenereal origin is much more common than is generally known. It represents between 15 and 20 per cent. of all cases of this disease.
2. Its recognition is important: (1) from the sociological and economic standpoint of the patient; (2) in its relation to prostatism, and (3) in regard to its etiology.
3. Many cases are undoubtedly due to distant foci of infection, or as sequelae to the acute infectious diseases.
4. Because of the obscure etiology of many cases, further study of this phase of the subject should be stimulated.
5. Relapses are characteristic of the disease, these cases being more resistant to treatment than are those due to the gonococcus. Therefore, successful treatment depends on the finding and the removal of the underlying cause, if possible.

6709 Jenkins Arcade.

Use of Mercurochrome-220 Soluble in Leprosy.—Forty-four lepers have been given injections of mercurochrome, and each patient has been under observation for at least a year. . . . A standard 1 per cent. solution of mercurochrome in freshly distilled and autoclaved water was prepared for each day's use. The injections were made by syringe into a cubital vein once weekly, and the routine dosage was 2.5 mg. per kilogram of body weight, with such slight variations as were indicated by the individual's condition. As a prophylactic measure, each patient was given careful dental treatment. Phenolsulphonephthalein renal function tests failed to show evidence of damage to the kidneys as a result of mercurochrome injections. Seven patients remained unchanged. Six patients showed slight improvement. Six patients showed moderate amelioration by improvement in general health and morale, the healing of ulcers, the diminution in the severity of ophthalmia and laryngitis, and the fading in the inflammatory condition of macules. Sixteen patients showed marked improvement e in general health or in the subsidence of certain leprous ations. Two patients are slightly worse than when begun. Three patients were moderately worse

FIFTY YEARS OF PROGRESS IN THE TREATMENT OF GONORRHEA *

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Until fifty years ago there were sporadic attempts at treating gonorrhea by means of local measures, but practically the treatment was limited to internal medication. The patients were placed on a more or less severe diet, they were purged, and the different herbs and balsamic remedies were fed to them in the form of pills, drops, electuaries, decoctions and emulsions. Frequently the kidneys received injuries from which they did not always recover.

The results as to the cure of the gonorrhea were prompt in some cases and lingering in others; some patients were never cured. The reasons given by practitioners to explain failures were transgressions against diet, transgressions against the prescribed mode of living, sexual excitement, and reinfection. These excuses became standard and have not changed much in the last fifty years.

URETHRAL SYRINGE

Then came Sigmund of Vienna, with his urethral syringe, made of zinc, the barrel all one piece with a nondetachable, olive shaped tip. A zinc or some copper solution was prescribed, and without any further instruction the patient was told to inject the fluid three or more times a day. Even nowadays we meet men who for years have been injecting various fluids into the urethra, finally to find out that they do not know how. The only appreciable difference is that the variety of fluids to be injected has enormously multiplied. One more effective and more infallible preparation after another was being thrown on the market, the profession being flooded with leaflets, pamphlets and samples. Most of the remedies have their vogue and in time make place for others.

DISCOVERY OF GERMS

Neisser discovered the gonococcus in 1879. In 1884, Rosenbach demonstrated the staphylococcus and the streptococcus. The elusive, though so frequent, inhabitant of the genito-urinary tract, the colon bacillus, was exposed by Escherich in 1885.

In 1906, I made a plea before the western branch of the American Urological Association for an individual syringe with a detachable and disinfectible soft rubber tip. There was none on the market at that time.

For many years after the discovery of the various offending germs only a few patients were saved from reinfecting themselves with their own syringes; and before the existence of the various germs was known, the damage done by syringes, elastic bougies, sounds, endoscopes and other instruments in the hands of the few who dared to use them must have been appalling. All kinds of instruments were introduced into the urethra during stages of actual inflammation to demonstrate why a given case did not respond quickly enough to the treatment, which consisted of syringing with some astringent remedy. Because the use of astringent remedies in the urethra gives mostly prompt but only apparent results, even nowadays attempts are being made to reintroduce astringents under different names and disguises.

Real progress must be noticed in regard to the sterilizing of instruments and of the hands using them. Before Lister's time the sterilizing of instruments consisted in simple and mostly superficial washing with soap and water, the soap being frequently dispensed with. The hands, as a rule, were washed only after, never before manipulations.

CENTERS OF GENITO-URINARY ACTIVITIES

From the times of Lallemand in the seventeenth century down to Desormeaux, who in 1853 devised the first urethroscope, preeminence in the genito-urinary field was held by France. About fifty years ago leadership was transferred to Vienna, thence to Berlin, back to Paris, and finally to the United States of America.

A fact little known is that the first aero-endoscope was invented by a Hungarian, Geza Antal, and that his invention went into disuse and oblivion because a young man, on whom Antal demonstrated to me most beautifully visible strictures, collapsed on the table, and died within a few hours in spite of all efforts made to save him. The obduction showed no cause for the death, and Antal's fellow physicians attributed it to the air with which the urethra was inflated. In view of late reports from London showing that air embolism may follow urethroscopy, this explanation may have been the correct one.

The treatment of gonorrhea giving poor results, various genito-urinary surgeons recommended the use of urethral suppositories made of various astringents and antiseptic remedies. They were frequently made so carelessly that further infection was accomplished. The results were never commendably noteworthy.

IRRIGATIONS

A great change took place in the treatment of gonorrhea when, in 1893, Janet devised a syringe with which the whole urethra and the bladder could be irrigated. Janet and a few experts could use this syringe with relative impunity; but the method did not become popular, as posterior urethritis, prostatitis and epididymitis were only too frequent results of the treatment in the hands of inexpert practitioners. It was left to the American Valentine to make the next improvement in irrigation of the urethra, by inventing and popularizing his irrigator with its glass tip. This apparatus became indispensable in the treatment of gonorrhea. Genuine and pseudo genito-urinary specialists, general practitioners in the cities, in the country, on the coast and in the mountains, equipped themselves with Valentine's irrigator. The quacks went further; they had a number of partitioned spaces and taught the patients to irrigate themselves. Potassium permanganate became the favorite remedy, with silver nitrate a close second.

Much damage was done; complications were frequent; as a rule, cures were accomplished only by those who had gentle touch and well trained Pacini bodies.

PROSTATIC MASSAGE

There is some controversy about the priority in regard to the massaging of the prostate gland. First used in 1858, disregarded and forgotten, again recommended in 1879, it was again disregarded and forgotten until it was almost simultaneously recommended and highly extolled by several authorities in the early nineties of the last century.

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* Read before the Section on Urology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

Slowly at first, but more rapidly in this century, prostatic massage became one of the most popular proceedings, almost universally adopted in the treatment of gonorrhea.

INSTILLATIONS

Of all Ultzmann's inventions, only his deep urethral instillating syringe, which he devised forty-five years ago, survives to this date. This and Guyon's syringe were invented to supplant Lallemand's porte caustic. Hundreds of modifications have been marketed, and an enormous amount of damage has been done in the posterior urethra. Whenever the morning drop has not disappeared swiftly enough, the deep urethra has been flooded with an exceedingly irritating solution. I always feel tempted to repeat what I said in 1910: "Any solution that cannot be applied to a person's cornea should at no time be injected into the urethra."

VACCINES

The results of the various kinds of local treatments of gonorrhea were not satisfactory to many urologists, and so from time to time other means were sought, tried, praised and recommended. Many vaccines were manufactured and became popular, only to be abandoned as useless. Results seemed to be obtained in some of the complications, such as epididymitis and arthritis; but the gonorrhea itself was influenced only so far as the energetic and enthusiastic therapeutists left the urethra at rest in order to treat the skin.

DYES

Early in 1915 I advised the use of fuchsin in the urethra as an excellent remedy in acute and chronic gonorrhea. At that time it seemed to me to be the long sought for chemical, possessing the power to penetrate the tissues and destroy the gonococci entrenched beneath the surface of the mucous membrane, without injuring the tissues. Unfortunately, the World War soon made it impossible to obtain chemically pure fuchsin, and various authorities began to use and recommend one dye after another. Now, since an excellent quality of fuchsin is being manufactured in the United States, any one who cares may convince himself that fuchsin is really superior to any dye recommended since 1915. Even the purest methyl violet, of which a large quantity was placed at my disposal by Ehrlich's successor Kolle in Frankfort, does not come near to the efficiency of fuchsin in the urethra.

Of course, the chemical itself must be of absolute purity, the solution properly prepared, proper strength used, and the irrigations not too frequently made.

HEAT

Another invention of Ultzmann's, the psychrophor, for a while extensively used, was abandoned as useless in the treatment of gonorrhea about twenty-five years ago. Still, the idea that heat may be employed in the urethra survived. Hot water could not be used to any effective degree, so various heating devices were marketed by some enterprising surgical instrument manufacturers; but even the best electrically heated sounds did not seem to accomplish a great deal. Heating up to 120 F. for whole hours at a time did not seem greatly to affect the offending germs. Recently diathermy has been recommended by Corbus and others. Dr. Ottinger at my office employed it in a great many cases and was at first very enthusiastic; but he has abandoned it of late.

It is a common experience that acute and chronic gonorrhea disappear after the patient is subject to high bodily temperature. for a long time, as during scarlet, typhoid and other fevers; but such conditions cannot be imitated artificially.

Electrolysis, the various quartz lamp heated glass rods, and the high frequency glass sounds have been tried, highly recommended, and also abandoned.

INTRAVENOUS MEDICATION

In the spring of 1919, I recommended emphatically the use of intravenous injections of mercuric chlorid for the treatment of suppurating and infectious diseases, reporting that very good results can be obtained in chronic, suppurating conditions following gonococcus infection.

Baccelli advised its use in gonorrheal arthritis in 1907, but his recommendation was not well received. During the last few years, various remedies have been concocted to be used intravenously, one of the latest being mercurochrome-220 soluble. With the possible reservation that mercuric chlorid is hard on the veins, it may be safely asserted that its usefulness is certainly superior to that of the other remedies; even injury to the veins may be avoided if proper precautions are used. Acute gonorrhea, however, is not being greatly influenced by any kind of intravenous medication that has thus far been employed.

Various proteins were recommended, mostly to be administered intramuscularly; but while some of them do splendidly in gonorrheal arthritis and epididymitis, they do not noticeably influence the discharge. The same may be said of intravenous injections of sulpharsphenamin.

INTERNAL MEDICATION AGAIN

Any one following the efforts of modern genito-urinary surgeons must come to the conclusion that the pendulum is again swinging the other way; that harsh manipulations are being gradually abandoned. More and more is heard of the futility of the many proceedings; and in France, the cradle of local treatments, more and more is being done to popularize the return to the internal treatment of the acute and chronic stages of gonorrhea, and even our own oracles begin to praise such remedies as hexylresorcinol.

It is certainly evident that the urethra invaded by the gonococcus, which is so frequently accompanied by other germs, should be handled only by skilled and delicate hands, hands that are directed intelligently and conscientiously. It surely would be better to leave the urethra in absolute peace than to treat it *cum furore*. It has been asserted without successful contradiction that most cases of acute gonorrhea would be cured in short time if the patient could be persuaded that he is really sick and therefore should go to bed, live on a very strict diet of the best milk and bread only, keep the bowels empty, and drink some alkaline mineral water, or even some of the various bland decoctions.

CONCLUSIONS

Real progress in the treatment of gonorrhea will not make its appearance until we abandon the idea that urology concerns the surgery of the kidneys, the ureters, the bladder and the senile prostate and ignores the genitalia proper, their contagious and functional pathologic conditions.

Physicians Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MACOMBER, BAKER AND VECKI

DR. ABRAHAM L. WOLBARST, New York: I am not fortunate enough to be able to duplicate the half century experience of Dr. Vecki, but I have served more than twenty-five years in the treatment of gonorrhea and believe that very definite progress has been made. The most striking evidence of progress in every branch of medicine is the realization that physicians now are treating a patient with a disease, rather than a disease in a patient. My conception of gonorrhea is that it must be considered in the nature of a constitutional invasion localized in one part of the body, and the aim should be not so much to destroy the gonococci in the urethra (the old conception) as to increase the patient's resistance to the infection. The silver salts are still the best local aid. They do not destroy the gonococci, but that is not necessary, or perhaps even desirable. If one can preserve the mucous membrane intact and build up the resistance of the patient, the mucous membrane will take care of the gonococci. A very good test of a man's ability to treat gonorrhea is found in the matter of complications. If a man goes over his records and finds that his patients are developing all sorts of complications, he is not treating gonorrhea properly. The fault lies with him. Epididymitis should be a rare complication if the disease is properly treated. But if he starts out with the intention of destroying the gonococci in the urethra by heroic methods, complications will surely develop. Dr. Baker's paper brought up a very important point. There is a type of gonococcal infection that runs along smoothly and apparently without posterior involvement, but one suddenly realizes that the prostate and vesicles have become involved imperceptibly. I have found that in early, mild acute cases, not more than a week old, a definite congestion of the prostate can be observed. Many men who develop acute gonorrhea already have a nonvenereal chronic prostatitis, and when on that prostatitis is imposed the acute venereal infection, the foundation is ready for an acute gonococcal prostatitis. It is well to examine the prostate in every acute case of gonorrhea and, if it is found congested, a little prophylactic treatment may prevent acute invasion and later chronic involvement. Many, perhaps all, of the cases of lowered fertility mentioned in Dr. Macomber's paper are due to the existence of chronic prostatitis and vesiculitis. The pathologic secretions in these bodies have a destructive effect on the spermatozoa. In extreme cases, in which spermatozoa are altogether absent from the seminal fluid, the reason is to be found in an obstruction somewhere in the genital tract, which prevents the egress of the spermatozoa from the testes. The obstruction frequently is found in the vas, less often in the ejaculatory ducts. I do not know the exact nature or the cause of this obstructive deposit, but believe it is due to a low grade inflammatory process, without manifestations of any kind.

DR. VICTOR D. LESPINASSE, Chicago: I have been interested in the subject of Dr. Macomber's paper for many years. Patients used to come to me and say that the wife was all right and the husband was all right, but they had no babies. There was a lack of knowledge on the part of physicians as to why a particular couple did not breed. I think the fecundity of the individual is something that is inherent in him. The general examination of these patients usually shows some endocrine disturbance; many patients are inclined toward the eunuchoid state. The point that Dr. Macomber made about the size and consistency of the testis is very important. In the animal, one will find the testis very small and hard in the asexual season, and large and soft at the height of the sexual season. The volume of the testis is due, in large part, to the size of the tubules and the spermatozoa. The hard and small testis is apt to be the nonfertile testis. There is no disease of any type or description in such cases, but no spermatozoa are present. The spermatozoa tubules consist only of the basal layer; none of the other layers are present. One point about determining weak spermatozoa that was not brought out in detail is the effect of secretion. I have found that not all the cases of infection in the prostate and vesicle are determined by the life of the sperm. Some of them seem to stimulate the motion of the sperm. There is sometimes a difference in the sperm secreted in the normal way and that secreted in cases in which there is contact with the infection. Dr. Macomber spoke of the gradual cessation of fertility as age advances. One of the common types is that of the man around 40 who marries for the second time; he may have had several children by his first wife, and usually marries a younger woman but has no children. He comes to the physician for relief, and examination usually shows that the sperm is deficient, as a result of a gradual breaking down. These patients are usually sedentary persons and treatment is usually a stimulating diet, with a large vitamin content. A testis outside the scrotum will not produce sperm. Men with one testis placed in the scrotum produce a weak sperm This, to my mind, is an element of deficiency in the whole process of spermatogenesis.

DR. WILLIAM C. BRYANT, Pittsburgh: Many patients have rather vague and indefinite symptoms, and they go from one physician to another without getting any relief and frequently are set down as neurasthenics or hypochondriacs. It is not surprising that blood-borne bacteria should attack the prostate, if the soil has been properly prepared. One of the most important factors, I think, is chronic congestion of the prostate, and the most frequent cause of this I believe to be chronic ungratified sexual excitement. The average physician frequently associates prostatitis and seminal vesiculitis with gonorrhea. I can illustrate this by relating a little occurrence of a few years ago. A doctor friend of mine was examining a young man for life insurance and asked him to pass urine in a glass. The urine contained a lot of shreds, and the doctor said, "When did you have gonorrhea?" The patient said he had never had it, but the doctor insisted that he must have had, told him that he would not turn him down for insurance because of it, and became provoked because he would not acknowledge having had a gonorrheal infection. He finally said, "I will show you what a man's urine looks like who never had gonorrhea. I will pass mine in a glass." He did so and it was far worse than that of the patient. The physician was suffering from a chronic prostatitis, which was not the result of gonorrhea.

DR. I. L. OHLMAN, Pittsburgh: Dr. Vecki has mentioned the air-dilating urethroscope. On going to England last summer, I made up my mind that I would investigate the different types of air-dilating urethroscopes and bring one home with me. At the London Lock Hospital, Mr. Johnston Abrams demonstrated such an instrument to me, and I saw one patient go into collapse —dilated pupils, profuse perspiration, intense pallor, precordial distress and absence of pulse. I asked Mr. Abrams what he thought caused this condition. He stated that the boy had been through the war, had lost his right leg, was shell-shocked and this condition was probably due to nervous excitement. I did not dispute his opinion, but I was not at all convinced that he was right. Mr. Abrams said that this was the most used instrument in England and that I might stop and have a talk with Mr. Swift Jolly, the inventor. A few days later I told Mr. Jolly of the occurrence at the London Lock Hospital, and without hesitation he said that the symptoms were due to air entering the circulation. I told him I had frequently injected air in small amounts with intravenous medication and had no fear, such as we were taught to entertain some years back With the air dilating urethroscope, if improperly used, Mr. Jolly said large amounts of air may enter the circulation, and then he related the history of three patients who had died in his clinic while being examined with his own urethroscope. He gave me details of the three necropsies. In the first case the findings were negative throughout, but a different technic was employed in later necropsies. When the chest had been opened in the second and third necropsies, the large vessels to and from the heart were immediately tied off tightly and the heart was opened under water. The result was that great volumes of air bubbled through the water. I came home from England without an air dilating instrument.

DR. CLYDE W. COLLINGS, New York: Regarding the treatment of acute gonorrheal prostatitis, I wish to recommend again the hot prostatic irrigations by rectum and make a plea for their more universal use. When a patient has a very frequent and painful urination due to gonorrheal prostatitis, I tell him to take a hot sitz bath and go to bed. I know of no form of treatment that makes a patient more comfortable and relieves him more quickly than hot rectal irrigations. There are many ways of giving them, and the secret of success depends on a good male nurse. My nurse places a small rubber tube about the prostate and a rectal tube below. He uses two one-gallon tanks with the water at 120 F. By the time it reaches the prostate, the water is about 117. It takes about twenty minutes to give the irrigation. I believe, as Dr. Wolbarst does, that we should beat the gun. I think we can definitely cut short the course of the prostatitis if we give prostatic irrigations when the first symptoms start. We have all had the experience of massaging the chronic, nongonorrheal type of prostatitis and seeing very little decrease of pus in the prostatic secretion over a period of months. I have been placing this type of case on hot prostatic irrigations and have cut down the course of treatment by about one half.

Dr. Victor G. Vecki, San Francisco: It was not the scope of my paper to show that Dr. Wolbarst cannot cure gonorrhea. I emphasized the fact that those with a tender touch can cure, but one must realize that chronic cases of gonorrhea that are not cured contribute more to the discontentment of the population with physicians than anything else. There are more people driven to the Christian scientists, the chiropractors and other cults because they are not cured of gonorrhea and its complications than for any other reason. I have seen them travel from Maine to California, and finally they do find some one to cure them. The point of the paper was to have the patient understand that he is sick and must go to bed, and if this is done there will not be so many cases of chronic gonorrhea. I was much interested in Dr. Macomber's paper, but I think there was one mistake he made in claiming that frequency in sexual intercourse deteriorates the condition of the spermatozoa. It does not. In fact, I have found by experiments and studies, notwithstanding what the old doctors used to tell, that if one examines the sperm from persons who had repeated sexual intercourse, he will always find that the second and third copulation will produce more fertile and resistant spermatozoa than those found in the individual who had to wait for months to have a sexual connection.

Dr. Theodore Baker, Pittsburgh: What I wanted to bring out especially was the frequency of nonvenereal prostatitis, and the importance of focal infection as an etiologic factor. I do not think this needs to be impressed on the urologist. Since this paper was written, I have learned in a personal communication from von Lackum of the Mayo Clinic that 24 per cent. of the cases of prostatitis in that clinic are of nonvenereal origin. The physicians there believe, also, that focal infection plays a very important rôle in the etiology.

Dr. Donald Macomber, Boston: Dr. Wolbarst spoke of the frequency of aspermia in cases of nongonorrheal infection. My experience has been just the opposite, for I have found this more frequent in the cases of gonorrheal infection. From what Dr. Lespinasse said, I understood that he considered the degree of fertility of an individual to be entirely a genetic factor. There is no question that there is a genetic factor. It is well known that different breeds of cattle or horses are infinitely more fertile than others, and the same thing undoubtedly pertains to man; but, granting this, it is also true that environmental conditions, such as diet and exercise, also affect fertility. The degree of fertility of a person may be much reduced by such adverse conditions. When the fertility has been thus reduced, it can be raised by appropriate treatment in many instances. Dr. Lespinasse also spoke of some cases in which fertility remains high in the presence of infection. That is true, and there must be more investigation before we can understand why a mild infection in one person will greatly reduce the fertility, and why a much more severe infection in another person will not have as much effect. He also spoke of the condition of the testis as affecting fertility. I should like to add that the presence of varicocele, untreated, when the testis is under undue tension or when the circulation is altered, certainly affects fertility a great deal. Dr. Vecki disagrees with the point which I brought up that too frequent intercourse may be the cause of nonfertility. It is certainly true that some persons have a very great potency. It is also true that we occasionally find more spermatozoa after greater frequency in a given person, but animal experimentation has shown perfectly definitely and animal breeders know that overuse of what is normal for given persons or animals does decrease the fertility. Williams of Cornell has shown this in breeding bulls. If the bull is overused, he will show a decrease in spermatozoa.

ACUTE ASCENDING INFECTIOUS MYELITIS FOLLOWING CHICKENPOX *

DAVID P. WALDMAN, M.D.
NEW YORK

Chickenpox is usually considered a mild disease not subject to serious complications or sequelae, apart from possible secondary infections of the skin lesions. The occurrence of a fatal complication is so unusual that it deserves full report in the literature. The fatality was due to acute ascending infectious myelitis.

REPORT OF CASE

History.—S. B., a woman, aged 32, treated for a mild attack of chickenpox with but slight fever, on the tenth day during convalescence, could not void urine. She was catheterized once and enjoyed the following four days out in the air, even driving her automobile.

On the evening of March 15, 1925, she suddenly fell to the floor in her home, her feet giving way under her, and she could not get up. The occurrence struck her humorously, as she had no pain at all. She was carried to bed, where she remained during all the following period of observation.

The temperature ranged up to 104 F. The patient was restless, her lips were dry, the tongue was coated, and the throat congested. The pupils were contracted but reacted to light and in accommodation. The heart was rapid and showed a systolic pulmonic blow. The systolic blood pressure was 130; diastolic, 90. The lungs were clear. The abdomen was distended, and the liver and spleen not palpable.

Retention of urine continued; vomiting occurred for a few days followed by hiccuping, which became persistent and distressing. After the day of the fall, the patient developed a sharp cutting pain around the chest and the back of the neck, with tingling sensations in the hands and forearms. The patient was constantly scratching this area for relief.

There was complete anesthesia of the entire body up to the level of the third rib on each side, extending down to the xiphoid in the midline, around to the apex of both axillae and across the back of the chest. For an area above this there was a zone of hyperesthesia.

The knee jerks, ankle jerks and abdominal reflexes were completely gone. There was no Babinski reflex. A bed sore rapidly developed behind the sacrum, and two very large blisters formed on the outer aspect of both feet.

A profuse vaginal discharge was negative for pus or gonococci. Incontinence of the bowels promptly developed. The urine showed a trace of albumin and many pus cells.

A diagnosis was made of acute ascending infectious myelitis following chickenpox.

The patient's family history was negative. She had been married five years; she had had one child and no other pregnancies. The child developed chickenpox several days following the onset of the myelitis.

The patient had had scarlet fever, measles and pneumonia as a child, and gave a history of occasional attacks of tonsillitis, with vague pains in the back of the neck.

Treatment and Course.—March 20, a lumbar puncture was performed. The cerebrospinal fluid was under moderate pressure, and 15 c.c. was removed. The fluid was clear and faintly smoky in appearance, and showed a moderately large increase in cells in relation to the red blood corpuscles present. There were 70 per cent. polymorphonuclear cells, indicating meningeal irritation. The reduction of Fehling's solution was low normal, 40 mg. per cubic centimeter. Albumin was recorded + +. Smears and twenty-four hour cultures were negative.

The Wassermann test in the blood was negative.

A number of consultations were held in the following few days at which the various neurologists were, in the main, in accord on the findings and diagnosis.

The anesthesia, the absence of all sensation, was complete up to the level of the third dorsal segment, with a zone of hyperesthesia extending up to the ramus of the lower jaw and behind the outer angles of the eyes. In the face, the sensation was normal. There was a suggestion of a return of the left knee jerk on one day and of a development of a slight Babinski reflex on the same side. This promptly disappeared.

When both arms were raised, the fingers of the right hand drooped. The upper arm jerks were present. The tongue protruded centrally. The right facial movements were slightly weaker than the left. The forehead wrinkled equally on the two sides. The jaw jerks were present and equal, and both pectoral reflexes were present. The triceps, biceps, radial, ulnar and wrist reflexes were equal.

The pupils remained contracted. The fundi were pale; the disks were pale, their margins not distinct, but they showed no papilledema.

The blood count on successive days showed polymorphonuclears, 82 per cent., and lymphocytes, 18 per cent. The Arneth ratio was 8-18-34-24-14-2.

There was pain across the shoulders and back of the neck, especially when the patient moved from side to side. The weakness of the right hand increased slightly.

March 23, over an area in the zone of hyperesthesia on the neck, 2 inches in diameter, just to the left of the midline, there was distinct localized sweating. Associated with this, there was slight ptosis of the left eyelid (Horner's syndrome), which persisted a few days.

The heart rate rose gradually from 96 to 120 a minute and showed marked sinus arrhythmia with frequent auricular premature beats.

The temperature ranged between 102 and 103 F. daily. The hyperesthesia extended over to the arms, and the arm reflexes increased on the right side.

Anteroposterior and lateral roentgenograms were made of the lower cervical and dorsal vertebrae, April 2. The upper dorsal vertebrae appeared to be extremely narrow as compared with the cervical and the lower dorsal vertebrae. There was also a suggestion of an erosion of the bone in the lamina of the second and third dorsal vertebrae. The appearance was suggestive of pathologic change in this region. There was probably pressure on the spinal cord at this location.

Local examination of the spine showed marked tenderness and pain on motion in the area of hyperesthesia.

There was mental aberration and irrationality at intervals. The patient sang loudly, talked aloud to herself, yet remained clear in her complaints of pain in the arms and back, although more irritable.

There developed severe diarrhea, which lasted two weeks and greatly weakened the patient and aggravated the sacral bed sore. The temperature ranged between 100 and 103 F. daily until the diarrhea subsided, April 20, after which time the temperature continued between 100 and 102 and at times ranged between 99.6 and 101.

The subsequent several weeks showed progressive weakness and pain in the back of the neck, which was controlled by morphin. The patient hiccuped and frequently vomited. The vomiting was difficult because it lacked the support of the abdominal muscles.

The pupils became somewhat dilated and reacted normally. The disk margins became less distinct. There was slight right facial paresis. At times, the breathing became deep with puffing of the cheeks.

The heart continued rapid and irregular. Life was manifest only in the upper extremities and head and neck, whereas the rest of the body, except for the circulation of blood in it, was inanimate. The patient lost much weight and finally lapsed into coma, in which she died with exhaustion of the vital centers, May 20.

A necropsy was unfortunately not granted.

COMMENT

The acute onset with the sudden loss of power and rapid development of complete anesthesia, the retention of urine and feces and later rectal incontinence, the flaccidity of the paralysis and the prompt development of trophic ulcerations make the diagnosis clear. Clinically, the case appeared like an acute myelomalacia with an extreme degree of softening and degeneration of the spinal cord. The grave features corresponded with the extensive and complete involvement of the cord up to the level of the third dorsal segment. The wide dissemination of the spinal lesion suggests its bacterial origin.

The complications that made the outlook immediately uncertain were the rapidly developing sacral bed sores and the severe cystitis, with the danger of extending pyelonephrosis. The diarrhea was another inauspicious complication.

The occurrence of Horner's syndrome at one period with the pupillary symptoms and unilateral sweating were due to involvement of the sympathetic through the upper dorsal segments. The paralysis of the intercostal muscles was an early finding, so that the breathing was mainly diaphragmatic.

A number of interesting points in this case deserve discussion:

The distribution of the vesicles was limited to the chest and back, with fewer on the abdomen and none on the extremities or face. The question therefore arises as to whether this may not have been a case of herpes zoster with rather diffuse radicular involvement.

However, when zoster is a direct symptom of myelitis, the area occupied by the rash usually coincides with the upper level of the anesthesia. Here, a band of hyperplasia represents the area of the cord undergoing destruction, and the zoster appears within this area. In our case, there was no pain at all until the sudden development of the ascent of the myelitis. Previous to that, during the period of the exanthem, there did not seem to be any spinal involvement.

It is maintained, especially by the French school, that chickenpox and herpes zoster are clinical variations of the same infection. It is easier to conceive of an infection of the spinal cord by way of the neural lymphatics from the anterior ganglions than of infection of the cord by way of the general circulation from chickenpox. In this case, there is one helpful clue to the question. The 2 year old child of the patient had a typical case of chickenpox immediately after the subsidence of the exanthem in the mother. Recently, Netter and Urbain[1] found that chickenpox appeared in a number of cases from thirteen to sixteen days after the appearance of herpes in other members of the same families. It has been shown that the sequence of chickenpox after herpes is more common than the reverse. Experimentally, the virus of herpes has been found to enter the central nervous system through the pathway of the nerves from a peripheral focus of infection. The mode of transit is believed to be by way of the axis cylinder rather than by the perineural spaces.[2]

Smallpox can be excluded from consideration, as the case never presented any of the characteristic features.

Hemorrhage into the cord may be considered from the suddenness of the involvement of the cord when the patient sustained the fall in the beginning of the illness. However, with hemorrhage alone at any level, the reflexes below would be increased, the paralysis would be spastic below the level, and the cerebrospinal fluid would have been bloody, which was not the case. A tumor of the cord would be more gradual in its onset and give other symptoms similar to those mentioned above.

1050 Park Avenue.

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[1] Netter, A., and Urbain, A.: Compt. rend. Soc. de biol. **90:** 461 (Feb. 29) 1924.

[2] Goodpasture, E. W., and Teague, O.: J. M. Res. **44:** 139 (Dec.) 124.

DIATHERMY IN STOMATOLOGY *

BUDD C. CORBUS, M.D.
CHICAGO

Diathermy is the most potent force that has been added to medicine and surgery in years. As its name implies, diathermy means "heating through." In its medical, sedative effect, diathermy may be mild and soothing; in its surgical, charring effects on tissue, it may be as fierce and destructive as lightning. In the milder application of this impelling force, it is unlike either galvanism or faradism, in that it causes neither pain nor contraction of tissue.

MEDICAL DIATHERMY

The application of heat as a therapeutic agent is as old as medicine itself. Hot moist dressings, hot water bottles, together with dry heat produced by electric pads and electrically heated incandescent bulbs, are time-honored methods of producing heat in the tissues by dissemination.

In diathermy, we have a form of heat that is absolutely different from any applied to the body externally. The current passes by a direct path from electrode to electrode. The relative tissue resistance between the poles does not materially affect the course of heat production, and the current, therefore, takes the direct rather than the easiest path.

The natural method of increasing the heat of the body is called fever. Diathermy produces a localized fever which can be applied to any selected region. The beneficial effects of natural fever are augmented by the fact that the artificial production of internal heat is practically unlimited, and is not attended with generalized functional impairment of the body.

The absorptive effect of the localized hyperemia induced by diathermy is brought about by increasing the quantity of water and water soluble bodies that are carried away from the edematous tissue through the vascular channels.

The solvent effect produced by diathermic hyperemia is presumably brought about by causing increased chemical action, or hyperemic increase of phagocytic action on partially organized clots or fresh calcareous deposits.

The nutritive effect of hyperemia is most valuable, by virtue of the increased metabolic changes resulting in accelerated tissue oxidation and stimulation of physiologic processes both chemical and physical.

In the cutaneous tissues beneath the electrodes, only a mild hyperemia results. There is a moderately increased activity of the skin glands resulting in slight perspiration.

In the application of medical diathermy to all forms of localized contusions, sprains, bruises, infection and congestions, we have a method that is accurate in its application, producing results that cannot be compared to any of our modern methods of applying heat.

SURGICAL DIATHERMY

Elsewhere [1] reference has been made to the pioneer work of Eugene Doyon and Franz Nagelschmidt in the surgical treatment of neoplastic diseases by heat induced by diathermy. I acknowledge that my stimulation and interest in the treatment of cancer by heat was created by the extensive publications of James F. Percy.[2] His statement holds true in every respect, whether the cold cautery or diathermy is used, "that the results depend on the dissemination of heat until the tissues known to be involved in the malignancy and those only suspected to be involved are fully infused with a degree of heat that laboratory and clinical experience has shown will kill the cancer cell in the tissues, regardless of whether it takes a long or short time to get it there."

Of all the physical means employed in the destruction of pathologic tissue, the only certain method is heat. I agree with Rohdenberg,[3] who says, "It appears that the most efficacious of all the many conditions which can bring about regressive changes in cancer is heat, applied from without or occurring under the limited conditions of long duration and comparative low degrees."

In the attack on the neoplastic cell with heat, we must bear in mind that pathologic cells offer less resistance to all destructive agents than do normal cells. This lowered vitality of the neoplastic cell dominates the whole question of the local treatment of neoplastic tissue by heat.

Jensen [4] has placed the vulnerability of cancer cells at 48 C. (118.4 F.) for five minutes; Loeb,[4] for sarcoma, at 45 C. (113 F.) for thirty minutes.

It has been shown conclusively by numerous laboratory workers that the malignant cell cannot be successfully transplanted after an exposure of ten minutes to a temperature of 113 F. (45 C.). It likewise has been shown that the normal tissue cells will bear a temperature of 132 F. to 140 F. (55 C. to 60 C.) without being destroyed.

In the application of surgical diathermy, the primal force as a destructive agent is heat. The production of this force depends, first, on the amount and character of the current employed to produce the heat and, secondly, on the size of the electrodes, whether flat or pointed.

Two methods of applying surgical diathermy are recognized: (1) desiccation, and (2) thermo-electric coagulation.

DESICCATION

Desiccation, devised and developed by William L. Clark [5] of Philadelphia, is best performed with the monopolar current (Oudin), a current of high voltage and low amperage, just enough heat being produced to cause local dehydration. According to Clark, "The desiccation spark is not hot enough to carbonize but is of sufficient heat to cause rapid dehydration of the tissues, rupturing the cell capsule, converting the area heated into a dry mass; as a consequence, superior cosmetic results follow, because though desiccation is a destructive process, it neither chars the flesh nor burns and there is, therefore, only slight secondary inflammation."

George A. Wyeth [6] says, "Desiccation is especially valuable in the removal of lesions about the face, neck, and hands. Warts, moles, pigmented nevi, papilloma, keratoses, those common blemishes, which, unsightly in themselves, are menacing because they may become malignant."

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* Read before the Section on Stomatology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] Corbus, B. C., and O'Conor, V. J.: Diathermy in the Treatment of Genito-Urinary Diseases with Especial Reference to Cancer, St. Paul, Bruce Publishing Company, 1925.

[2] Percy, J. F.: Best Methods of Discouraging the Activity of Inoperable Cancer, J. A. M. A. **62:** 1631 (May 23) 1914; Am. J. Obst. & Gynec. **6:** 78 (July) 1923.

[3] Rohdenburg, G. L.: J. Cancer Res. **3:** 193-325 (April) 1918.

[4] Quoted by Clowes: Annual Report of New York State Cancer Laboratory, 1910.

[5] Clark, W. L.: Cancer of the Oral Cavity, Jaws and Throat, J. A. M. A. **71:** 1365 (Oct. 26) 1918; Pennsylvania M. J. **24:** 214 (Jan.) 1921; New York M. J. **105:** 971 (May 26) 1917.

[6] Wyeth, G. A.: Ann. Surg. **79:** 9 (Jan. 24) 1924.

THERMO-ELECTRIC COAGULATION

In all malignancies, whether superficial or deep seated, thermo-electric coagulation should be employed. This is produced by the bipolar current (d'Arsonval); that is, a current of low voltage and high amperage. As its name implies, the immediate effect is thermo-electric coagulation.

The current is driven through the tissues, between the active and the inactive electrodes; on account of the high amperage and the resistance of the tissues to the current, heat is developed in the depths of the tissue. At the point of the active electrode, it is sufficiently concentrated to destroy tissue actively, provided, of course, sufficient is used. It must be distinctly remembered that the electrodes are cold when applied, and it is primarily the tissue that gets hot and not the electrodes.

TECHNIC

The active electrode may be equipped with either a needle point or a flat disk; the latter may vary in size.

The inactive electrode is placed on the body, preferably in a position to insure a direct line of current. There should always be interposed between the skin and the electrode a pad of gauze moistened with hypertonic salt solution to protect the parts from blistering. In long operations, this should be frequently moistened.

In all circumscribed malignancies that occur on the cutaneous surface, especially the hands, face, eyelids and lips, the method described by Clark and Wyeth I consider ideal. However, with an experience extending over seven years, including the treatment of thirty-eight malignant tumors of the bladder, cancers of the urethra, penis, rectum, uterus, breast, hands, face, eyelids, lips, cheek and tongue, I think the flat disk electrode far superior in the treatment of deep seated lesions. If properly applied, it does not produce carbonization of the surface, thereby permitting great heat effects in the depths of the tissue. All coagulation must be done slowly. Sufficient time must be given to heat not only the part known to be involved, but also any part that one suspects might possibly be involved, including sufficient apparently healthy tissue to insure total destruction of the growth. When the procedure is completed, the whole area should have a thorough "parboiled effect."

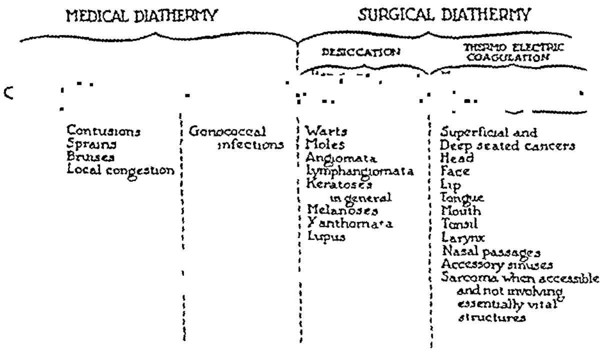

Fig. 1.—Approximate degree of heat utilized in treating the different disease conditions with medical and surgical diathermy.

FULGURATION

Sparking and carbonization with the bipolar current (d'Arsonval) under the name of fulguration is an old procedure. However, few realize that carbonization of the tissue by sparking is the one thing that prevents heat penetration. When a benign tumor is destroyed by raining sparks down on its exposed surface, an area of carbonized tissue is rapidly formed. The tissue fluids are rapidly removed, and there is interposed between the electrode and the underlying neoplastic tissue a layer of carbon, which is a nonconductor of electric currents, and acts as an insulator.

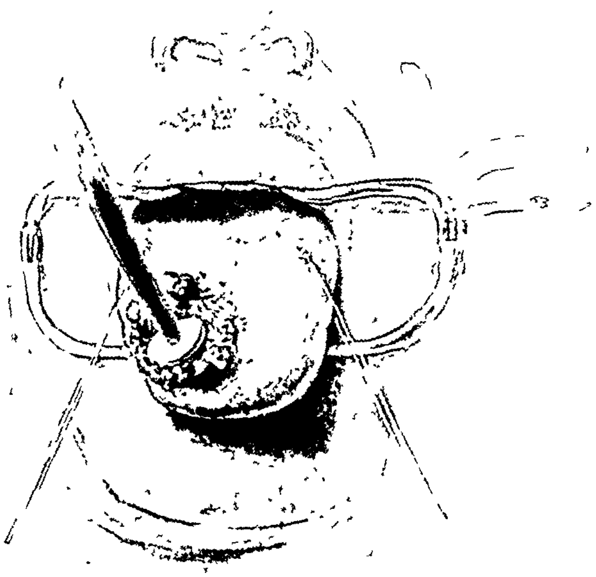

Fig. 2 (Case 1)—Method of destroying carcinoma of the tongue by thermo electric coagulation, the flat disk electrode being used.

For the same reason, in the application of surgical diathermy with the needle point electrode, the superficial carbonized tissue must be curetted away in order to carry the heat effect deep into the neoplastic growth.

ANESTHESIA USED FOR DESICCATION

For all benign growths that are to be destroyed by desiccation, infiltration with any of the well known local anesthetics should suffice. When patients are unduly nervous, one-sixth grain (0.01 gm.) of morphin, hypodermically, one-half hour before the operation may be employed.

ANESTHESIA USED FOR THERMO-ELECTRIC COAGULATION

For all malignancies that are circumscribed and easily accessible, we have found scopolamin-morphin anesthesia supplemented with local anesthesia ideal. However, when the operation is extensive and involves cephalic regions, we have found chloroform to be safer than either ether or gas.

If the patient is to be operated on at 9 a. m., no fluids are permitted after 2 a. m. A high soapsuds enema is given at 6 a. m., one-fourth or one-sixth grain (0.02 or 0.01 gm.) of morphin sulphate and $\frac{1}{100}$ or $\frac{1}{150}$ grain of scopolamin, depending on the amount of narcosis desired, are given hypodermically at 6:30 a. m., one sixth grain of morphin sulphate and $\frac{1}{150}$ grain of scopolamin are given at 7:30 a. m., the same amount is repeated at 8:30 a. m., and we operate at 9 a. m. Care in keeping the patient quiet and in a darkened room, avoiding conversation and undue commotion, should be carried out as a routine. Often scopolamin-morphin anesthesia alone is sufficient for the entire procedure.

ADVANTAGES OF DIATHERMY OVER CUTTING PROCEDURES

In the operative treatment of neoplasms, it is necessary in working out a technic to keep constantly in mind that every step of the operation must be so planned as to avoid implanting tumor cells on raw or cut surfaces. If tissue is taken for biopsy with a knife or with scissors, it should be immediately followed by thermo-electric coagulation. The new radio knife is excellent for this procedure, as it seals as it cuts.

Diathermy is absolutely bloodless if a flat or blunt electrode is employed, which, if properly used, insures not only total destruction of the mass but also sufficient coagulation of the tissues in the immediate neighborhood to minimize the possibility of cell implantation. Vascular structures situated in the near vicinity are sealed, thereby lessening the absorption of infection. Consequently, a shorter convalescence is insured. On account of the absence of any extensive cutting procedure, postoperative shock is minimized, and this is of great value in operating on patients of advanced years. Lastly, and most important of all, is the density and extent of the scar tissue that results after the employment of diathermy in treating malignant disease. The body defense against carcinoma metastasis lies in the formation of the connective tissue capsule. The scar tissue that is formed after a diathermy "burn" is more dense and spreads farther into the surrounding tissue than is the case after any cutting operation; therefore, we have an extensive reinforcement of nature's attempt to throttle the embryonal cell.

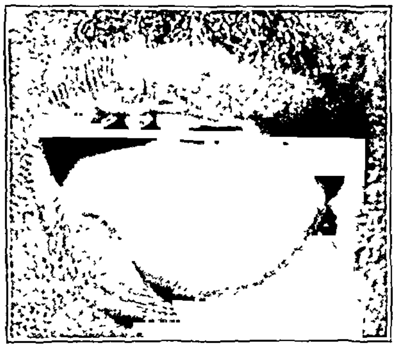
Fig. 3 (Case 1).—Appearance of tongue three years and eight months after thermo-electric coagulation.

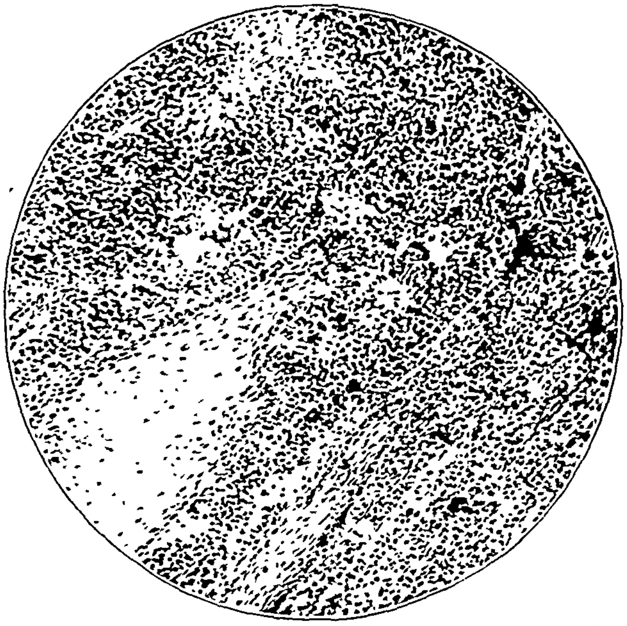
Fig. 4 (Case 1).—Appearance of tissue at time of coagulation; squamous epithelium of tongue, with reversion to the embryonic cell type and invasion of the subepithelial layers.

No mention has been made of the treatment of regional metastases by either roentgen ray or radium. I am in favor of this form of treatment rather than surgical excision, but at the request of my urologic confrères, during the last four years, diathermy alone has been used in the treatment of malignant neoplasms.

REPORT OF CASES

Case 1.—S., a man, aged 42, noticed a sore on the side of his tongue, in July, 1921. The family history was negative and there was no history of venereal disease. There was present in the mouth a sharp corner on a movable bridge which undoubtedly caused the irritation on the tongue. This continued to grow, and the patient consulted Dr. H. A. Potts of Chicago in September, 1921. At this time, there was present on the side and dorsal surface of the tongue an infiltrating carcinoma about 2.5 mm. in diameter. The submaxillary glands on the right side were palpable.

September 16, with the assistance of Dr. Potts, operation was performed under chloroform anesthesia. In order to have a clear field for operation, a mouth gag was introduced and sutures were passed through the tongue back of the tumor. It was then coagulated by thermo-electric coagulation. The whole procedure did not take five minutes.

Twelve days later, a brisk hemorrhage occurred necessitating the tying of the lingual artery by Dr. Potts. With the exception of the latter procedure, the patient made an uneventful recovery.

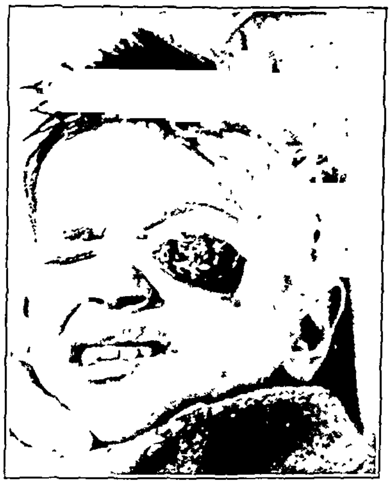
Fig. 5 (Case 2).—Appearance of eye on the day the tumor was coagulated.

Case 2.—This case record is submitted by Dr. Thomas C. Galloway of Evanston, Ill. J. C., a boy, aged 7, seen with Dr. C. J. Swan, May 12, 1924, had had for one and one-half months pain around the left eye, and for ten days the mother had noticed that this eye was slightly more prominent and the palpebral fissure was slightly larger. Vision was 1.0, proptosis was slight, the palpebral fissure was moderately widened and the bulb could not be pressed back. The pupil reacted normally. The retinal veins were moderately dilated. Movement of the eye was limited in all directions. The roentgen ray indicated no bony involvement. A tentative diagnosis of malignant retrobulbar tumor was made. Under observation for one week, the proptosis definitely increased to about 8 or 10 mm., the palpebral fissure widened, and definite swelling of the disk developed. The temperature was normal, and the blood Wassermann reaction was negative. An exploratory Krönlein operation was urged at this time by Dr. Swan. Drs. Oscar Dodd and E. V. L. Brown agreed with the findings, the tentative diagnosis, and the advice for operation. So far as I know, no section has been made of the tissue but the diagnosis of malignant sarcoma seems most probable because of the rapid growth of a retrobulbar tumor, later invading the lid tissues, in a patient of this age, with no involvement of the bony structure. Operation was refused, and the patient taken to see a number of other men in Milwaukee and Chicago. When next seen, about one month later, the proptosis was much increased. The patient was then to begin radium treatment in Chicago.

Five months later, I was called by a visiting nurse to see the patient at home and found him whimpering with pain, his head buried in the bedclothes. For three days, the mother had been unable to clean the eye on account of excruciating tenderness. She stated that radium treatments had continued up to two months preceding, when a hopeless prognosis had been given along with a caution against surgical intervention.

A tumor mass about 3 cm. protruded from the left orbit, which was beefy, ulcerated, with dirty grayish exudate on its surface, the widely spread lid margins being just distinguishable. There were no discernible markings of the globe. The lids were adherent to the mass.

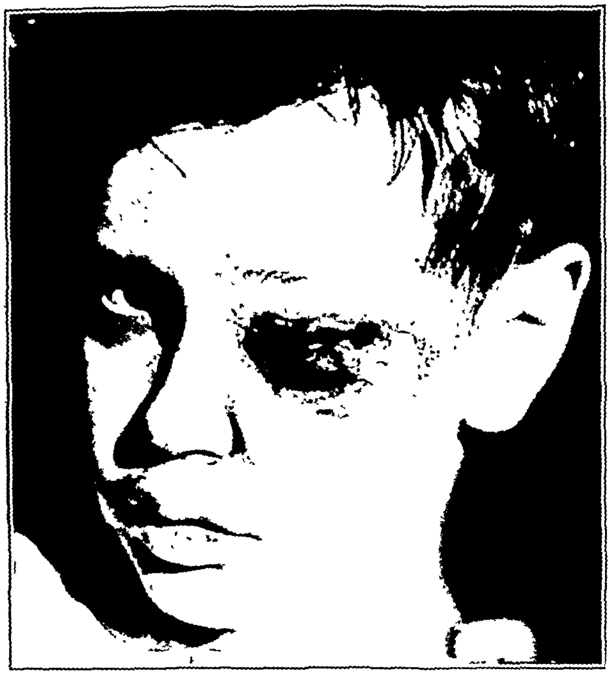

Fig. 6 (Case 2).—Appearance of area eight days later, showing eye and tumor destroyed. The dry, necrotic tissue occupies the whole palpebral fissure.

Two days later, I coagulated this mass by surgical diathermy, using a large button electrode over the whole anterior surface, including the lid margins. After coagulation, the shrunken globe was easily shelled out of a grayish, uniform, firm tumor substance, which pressed forward from the medial-superior aspects of the orbit. No attempt was made to remove the necrotic mass, which sloughed out, over a period of five weeks, healthy granulations springing up at the line of separation, and epithelium growing in rapidly from the margins. *Jan. 30, 1925*, a second electrocoagulation was done with a smaller electrode with the design of cooking all the tissue up to the medial wall of the orbit.

There was immediate relief from pain after the first treatment, with no return since. An irregular fever of about 1 degree occurred during the period of sloughing, but the patient's general condition rapidly improved, and from a morose, gloomy boy he quickly became an alert and happy one. It is too early to know the ultimate outcome, but the results to date have been most fortunate for the patient, and all clear gain for the method, not possible by any other means.

30 North Michigan Avenue.

ABSTRACT OF DISCUSSION

Dr. George A. Wyeth, New York: I am heartily in favor of Dr. Corbus' idea, but I am not in accord with his method of applying electrothermic measures. The larger part of our work could not be done by electrocoagulation, because the coagulating current is so high in amperage and gives such an intense heat penetration that it should not be used in most of the superficial work. Dr. Corbus says that the flat disk electrode is far superior to the sharp-pointed electrode in the treatment of deep-seated lesions, and adds that, when the procedure is completed, the whole area should have a thoroughly parboiled effect. That is our chief objection to the flat plate electrode; we do not want the "parboiled effect." Widespread destruction is caused by the plate electrode, while with the sharp-pointed electrode the current can be confined to the precise point we wish to treat. Dr. Corbus is mistaken when he says we cannot penetrate. We can penetrate with a sharp-pointed electrode to just the depth we desire to reach. Also, there are many other conditions, particularly in the mouth, in the treatment of which Dr. Corbus would have difficulty with his electrocoagulation. One of the best cases to which the monopolar current is applicable is leukoplakia. By going lightly over the surface of a leukoplakia, we can use just enough heat in the tissue to cause a local dehydration; then with a curet we can flake it off. We know that leukoplakia is readily cured by endothermy, provided tobacco is interdicted, and we know of no other method that works so well in these conditions. In papillomas, fibromas, small cysts, angiomas and such lesions as occur in the mouth, the monopolar current is far superior because we do not want deep penetration. Dr. Corbus mentioned the radio knife. I resent that term very much. We have introduced this method under the name of endotherm knife. In considering Dr. Corbus' reference to persons who are trying to establish another terminology for the surgical application of diathermy, I may say that there is a great deal of confusion in this nomenclature. In an endeavor to standardize nomenclature we have tried to separate the surgical application of high frequency currents from the medical application. We have been using rectal anesthesia entirely. This has marked advantages over the old method of anesthesia, particularly in mouth conditions when we want to get away from the danger of ether.

Dr. Douglas Morgan, *Philadelphia*: Intense currents are destructive but the control is so perfect that, when using the monopolar currents in particular, the most delicate operation, on the cornea of the eye, for example, can be performed without causing poor cosmetic results, nor interference with function. Or the vocal cords may be treated, in cases of malignancy, without impairing phonation. I do not know of any methods that are more valuable in conditions in and

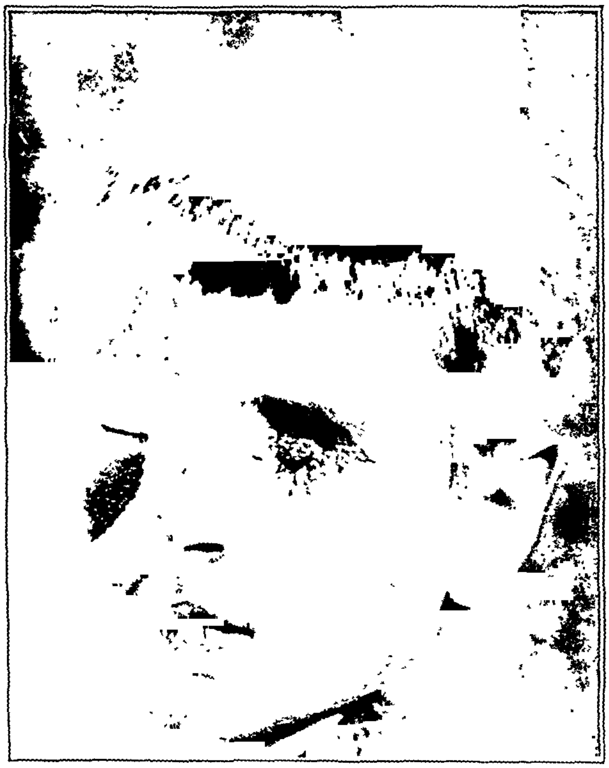

Fig. 7 (Case 2).—Appearance of patient, May 10, 1925: The small raised area is a recurrence of the growth. This was destroyed a second time by thermo-electric coagulation.

about the mouth than desiccation and coagulation, but we must not forget that by themselves, in conditions likely to metastasize, they are insufficient; we must use irradiation methods in conjunction with them. Basal cell conditions can be treated by desiccation or coagulation, depending on the degree of destruction necessary; but when squamous cell conditions are present it is of the utmost importance to give thorough irradiation in addition, sometimes locally to the area operated on, but in all cases over the lymphatics draining that area; otherwise there will be recurrences. Dr Corbus seems to reserve the desiccation method for benign conditions and the coagulation method for malignant conditions. In malignant conditions the desiccation method can be quite sufficiently destructive, the depth of destruction depending on the intensity of the current, on the depth of penetration of the needle electrode, and, also, on the time it is left in the tissues. I have had no experience with the flat disk electrode, because, to my way of thinking, it does not offer the same possibility of control. We prefer the sharp-pointed electrode. Dr. Wyeth said he resented the use of the term radio knife. So do I. He substituted the term endotherm knife. I resent that equally. He extends his method a little too far. He uses the term endothermy to indicate that heat is developed within the tissues. As an alternative for surgical diathermy, as opposed to medical diathermy, I think the term endothermy is quite permissible It means "heat from within," but in using this endotherm knife no heat is developed within the tissues; it is not indeed a matter of heat at all. A little heat is developed on the surface from the small arc that is formed, but the cutting is accomplished by molecular disintegration of the protein and fat molecules by the undamped oscillations. Dr. Howard Kelly prefers to call this instrument the acusector, "acu" signifying a needle, and "sector" to cut. As an abbreviation he uses the term sector. I think it is a very good substitute for Dr. Wyeth's term endotherm knife, and certainly much better than the term radio knife, which is a trade term, without anything to recommend it.

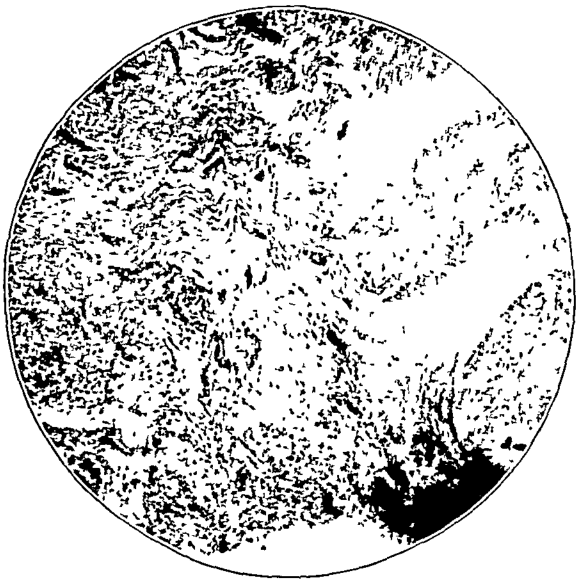

Fig 8.—Section of scar tissue taken from dog's bladder twelve weeks after diathermy burn The areas in Figures 8 and 9 show a sharp line of demarcation between the surrounding tissue and the diathermized area. The latter is entirely replaced by bands of fibrous tissue arranged both longitudinally and transversely

Dr. O. L. Norsworthy, Houston, Texas: Definite knowledge as to the structure and the histology of all malignant neoplasms is not possible. When in doubt as to malignancy, one should treat the case as if it were proved carcinoma. There is no known method better than electrothermic coagulation for destroying growths in the mouth, but they should all be irradiated before and after any method of operation. Electrothermic coagulation will destroy blood vessels and nerves, also cartilage and bone. Its limitations are indefinable at the time of its use. Secondary hemorrhage, following coagulation of a mouth lesion, convinced us that it was safest to ligate the facial or lingual artery or both, or the external carotid, before extensive coagulation in or around the mouth or face.

Dr. Lucius W. Johnson, Washington, D. C.: Electrothermic treatments are an adjunct. I believe thoroughly in the importance of preoperative and postoperative irradiation. We see many malignancies in which irradiation has reached its limit and no longer affects the growth because of the excessive amount of fibrous tissue, and the growth is not yet destroyed. Electrocoagulation will destroy all of the diseased tissue. That is one of its most valuable applications. We have found the radio knife very valuable in removing breast or other tumors after the limit of irradiation has been reached. Unless one is certain that a skin growth is a basal cell tumor, it is better not to desiccate or coagulate without previous irradiation of the glandular areas as well as of the growth. In the small tumors around the face, both malignant and benign, after considerable experience with both methods, I have gone back to surgery. With surgery one removes the whole thing; at the end of three or four days he removes the stitches, and in two weeks the scar is almost invisible. That is a point that nobody has brought out previously, that when desiccation or coagulation is used in superficial growths, it takes time for them to heal; it takes two or three weeks for the smallest mole to heal over after it is removed.

Dr. C. R. Edwards, Baltimore: For three years in all mouth cases, I have made it a habit to ligate the external carotid or the lingual artery, usually the external carotid, especially if the lesion is far back, and I have had no secondary hemorrhages in any case. I have had hemorrhages in two cases of carcinoma of the cervix, in which, of course, the blood supply was not cut off; the hemorrhage occurred usually on about the fifth or sixth day. It was controlled in both cases by packing, but it emphasizes the necessity of ligating the blood supply to these parts. I disagree with the statement that was made that it was necessary to do the operation under chloroform. Three years ago, I operated on two patients under chloroform anesthesia, and both of them nearly died The anesthetic was given by expert anesthetists. Since that time, I have done all my mouth cases under ether anesthesia. I have had no mishaps, and I believe there are no indications or necessities for mishaps. The patient is thoroughly anesthetized, and then all of the apparatus, towels, cones and everything that had anything to do with the giving of the anesthetic are removed from the room, and wet towels are placed all about the patient's face and shoulders and back of

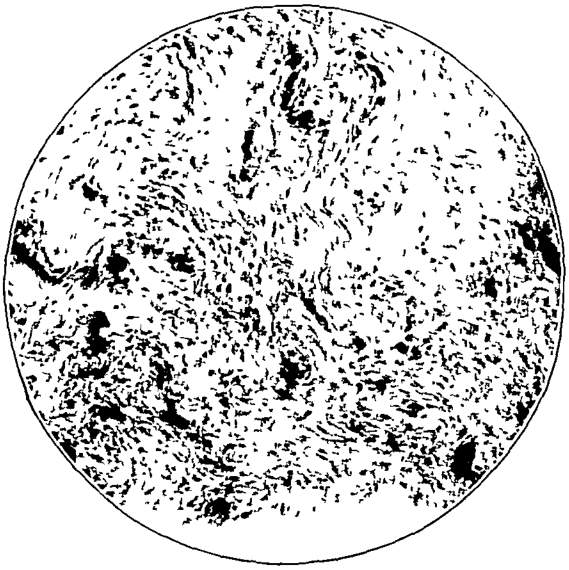

Fig 9.—Section of scar tissue taken from dog's bladder twelve weeks after diathermy burn

the head over the pillow. There never has been ignition from gas of any kind.

Dr. G. E. Ward, Baltimore: We began our work with electrothermic methods about a year ago, and in that time we have worked over some 300 cases, constantly using all three methods of endothermy—monopolar, bipolar and the endotherm knife. We always use the needle-point electrode. It is best first to circumvallate (Wyeth), to stop all lymph and blood drainage from the part, and to follow by curettage or excision. Toxic results may arise if the slough is left to separate spontaneously. Dr. Corbus called attention to an interesting theory, namely, that cancer is not a local disease but a local manifestation of some generalized condition. Whether it is hereditary or infectious is also a question under earnest investigation. I do not believe that destroying the growth by radium, roentgen ray, or electrocoagulation or desiccation establishes an immunity.

Dr. E. L. Hergert, Brooklyn: Dr. Corbus has gone very minutely into the therapy of diathermy. I do not agree with him about fulguration. Fulguration is a monopolar current. I used it three or four years ago in the treatment of diseased tonsils, and I had unsatisfactory results. I made ten different applications to the tonsils, five times on each tonsil, to fulgurate, and I did not get results, except a little diminution in the size of the tonsils. So fulguration really should not be used at all to treat infected tonsils. As to the use of bipolar fulguration in the treatment of cancer, I believe that Dr. Bainbridge of New York treated some of those cases ten or twelve years ago with indifferent results, following Dr. Keating Hart's technic. Dr. Corbus did not mention anything about local anesthesia. It seems to me that we ought to employ more local than general anesthesia in operative work and to give the patient as little pain as possible. I have been in the habit of experimenting on myself before doing any electrotherapeutic work. When I started to do diathermy five years ago, I tried almost every electrode on myself to see how it worked. Before I made an attempt to remove any of my patients' warts by desiccation, I tried to remove warts on myself in order to see how it felt. I often try many medicines on myself before I prescribe them to other persons, to see what the physiologic effects are. There is quite a little pain in desiccation without local anesthesia of some sort. I often give intramuscular injections of different drugs, such as bismuth and morphin. I am also in the habit of swabbing the skin with a 15 per cent. solution of phenol (carbolic acid) in ethyl alcohol. Then one can be sure that there will not be any pain while administering hypodermic injections of any drug. If one wants to go a little deeper and desiccate the base of a wart, one has to infiltrate with a little procain. I generally use a 1 per cent. solution.

Dr. Budd C. Corbus, Chicago: I said in the beginning of my case reports that I wished to go on record as in favor of thermo-electric coagulation rather than surgical excision. In this paper no mention has been made of the treatment of regional metastases by either roentgen ray or radium, but I approve of the method. At the request of our confrères we have not used either radium or roentgen ray for three years in conjunction with diathermy. Thermo-electric coagulation was used alone with the idea that we would have a better understanding of the treatment of malignant tumors by heat. Diathermy, medical and surgical, is practically the same thing. It all depends on the amount of current that is used and the size of the electrodes employed. I think that Dr. Wyeth will agree with me there. I classified surgical diathermy under two headings, desiccation and thermo-electric coagulation. William L. Clark of Philadelphia was the first man that I know of to speak about desiccation, and credit is given him for that method. I am sure we all appreciate the wonderful work with regard to nomenclature that Dr. Wyeth has done, but he describes his endothermy as monopolar and bipolar endothermy; the latter he calls thermo-electric coagulation. Why introduce the word endothermy? Why not call it surgical diathermy, and divide surgical diathermy into desiccation and thermo-electric coagulation? I described two methods of destroying the tissue: first, the needle electrode, and, second, the flat disk electrode. It goes without saying that when one is working in delicate structures, a flat disk electrode would be cumbersome and would destroy too much tissue; a needle electrode is far superior. But it seems to me that if any one would try to use the flat disk electrode in a case of cancer of the tongue, he would be just as successful in a far shorter time than with the needle electrode. At the present time we have the largest group of cancers of the bladder in which the patients are alive and well, of any one that I know. We have had only four deaths among thirty-eight cases. Some of these were treated transureterally. When they were treated that way we did not destroy them by sparking or charring them. We put the electrode in the base of those tumors and coagulated. Our endeavor is to destroy the neoplastic tissue by heat, not by charring. One may char a tumor and take it away very nicely, but one does not get the heat into the depths of the tissue.

SUBTOTAL GASTRECTOMY [*]

JOHN B. DEAVER, M.D.
With Considerations of the Pathology and
Pathologic Physiology by
STANLEY P. REIMANN, M.D.
Director, Research Institute, Lankenau Hospital
PHILADELPHIA

[Editorial Note.—This paper and the paper of Dr. Crile, which follows it, constitute a symposium on gastric and duodenal surgery.]

SUBTOTAL GASTRECTOMY

By Dr. Deaver

Successful radical operation on the stomach was first accomplished by Billroth, in 1881, for carcinoma. For many years this formidable procedure was reserved for such cases, but with the passing of time the indications for the operation have been extended. This extension is primarily due to the very satisfactory remote results obtained in both malignant and benign disorders, although the rôle of the greater dexterity and familiarity with the methods and the consequent improved technic play a very important part in its extended present-day application.

Subtotal gastrectomy is now, I believe, the operation of choice in benign disorders of the stomach and duodenum, chronic ulcer, its sequelae, hour-glass stomach, pyloric stenosis and secondary or marginal ulcer.

The rationale of any operative procedure depends on the ultimate end in view, so that its logical aspect is mainly its physiologic aspect. This cannot be properly treated without some consideration of the etiology of the disorders that lead to indications for radical gastric surgery.

The etiology of gastric carcinoma is enshrouded in the same obscurity as carcinoma in general, except for the well known fact that a certain percentage of cases develop from an ulcer, 35 per cent. (?) in our experience at the Lankenau Hospital. While this percentage varies according to individual interpretations as to whether or not these are malignant from the start, the incidence itself is sufficient to justify the conclusion that gastric ulcers are inherently malignant until they are proved benign. This, of course, is best proved by actual examination of the removed ulcer.

As to the etiology of ulcer, here also opinions, or I might say prejudices, vary, but to me it appears that it can be summed up in two words—infection and acidity. Whether these two are related, and how, would necessitate a few words on the secretory and motor functions of the stomach, which time will not permit me to discuss now. Suffice it to say that the various operative procedures seem to bring about some change in these two gastric activities. Gastro-enterostomy alone probably does heal a number of the ulcers, but we do not know exactly how. The motor function, as far as the emptying time of the stomach is concerned, is only slightly affected, but there is considerable change in the gastric chemistry due either to reflux of the alkaline intestinal juice, or changes in the secretory activity of the gastric glands. By whatever route infection is carried, it comes from a definite focus, which, I believe, in fully 80 per cent. of cases resides in the appendix, and in the remaining 20 per cent. comes from the mouth, the tonsils, the facial sinuses and other foci.

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[*] Read before the Section on Surgery, General and Abdominal, at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[*] Because of lack of space, this article is abbreviated here by the omission of several illustrations. The complete article appears in the Transactions of the Section and in the authors' reprints.

The pathologic lesions are often so clear that the sequence of appendicitis followed by ulcer is practically unmistakable. Their relationship is much the same as primary disease of the liver cells and disease of the gallbladder.

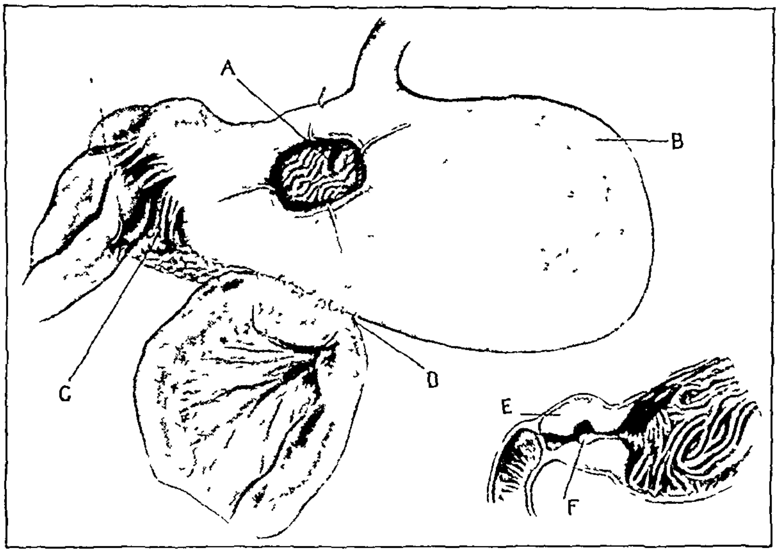

Fig 4 —Gastric ulcers, old pyloroplasty and new gastrojejunostomy seen at necropsy. *A*, chronic ulcer below lesser curvature, *B*, enormously dilated fundus, *C*, adhesions at old pyloroplasty, jejunum, pancreas (shown), liver, transverse colon, to stomach; *D*, new gastrojejunostomy Inset, longitudinal section through pyloric end; *E*, no muscle, but dense connective tissue; *F*, chronic ulcer constricting outlet

Failure adequately to treat these foci of infection has also been a contributive factor in our familiarity with the technic of radical operation on the stomach.

These radical operations may be said to include pylorectomy, partial gastrectomy, circular resection, subtotal gastrectomy and, of course, complete gastrectomy.

Although they are probably familiar to most physicians, it may be well to define the terms used in designating the extent of these resection operations, which they all in reality are.

Pylorectomy means removal of the pylorus with its antrum, while partial gastrectomy includes also parts adjacent to the pylorus and antrum and always the greater part of the lesser curvature; extension of the operative area toward the fundus along the greater curvature makes it a subtotal gastrectomy. By circular sleeve resection we mean removing the central portion of the stomach, not including either the pylorus or the fundus, although the lines of division extend from one curvature to the other and include the entire circumference of the stomach; the lumen of the stomach is restored by end-to-end anastomosis.

I have of late abandoned these various operations in favor of subtotal gastrectomy whenever feasible in both duodenal and gastric ulcers. In a number of cases of duodenal ulcer in which the ulcer was small and with little surrounding indurate, I simply excised the ulcer, and often, but not always, followed with posterior gastro-enterostomy with immediate satisfactory results even in acute perforation in which operation was made early. The end-results, as seen in our follow-up service, seem to justify the procedure in the early cases, but not in the old chronic cases in which the combined action of infection and hyperacidity has had a chance to enhance the pathologic condition. And then there is the small but ever present menace of marginal ulcer—a risk that is less in the radical operation. In some types of duodenal ulcer, for example, when they are located on the posterior wall of the first portion or in the second portion with much surrounding and organized exudate, it may not be possible to amputate the duodenum below the ulcer, or to invaginate the walls of the duodenum after an amputation above the ulcer, and make a closure secure against immediate or remote leakage. Occasionally one encounters extensive infiltration of the gastrohepatic omentum as well as involvement of the head of the pancreas, precluding direct operative attack. The essential to success in cases in which there is widespread exudate is to be able to free the duodenum, as well as to have perfect control of bleeding. Often, however, on account of an old gallbladder condition, the duodenum may be bound down or tightly agglutinated by dense layers of organized exudate. When this is the case, gastro-enterostomy is a better procedure. These, too, are the cases in which the roentgen-ray reports are confusing. Advanced pathologic conditions of this kind are sometimes the result of prolonged medical treatment. I cannot emphasize this too strongly and hope that it may carry home especially to the band of specialists labeled gastro-enterologists.

The indication for operation in chronic ulcer, duodenal, gastric, gastrojejunal or jejunal, is the diagnosis of ulcer, when the symptoms persist after systematic medication has been given a fair trial.

The sequelae of ulcer are also indications for operation, except in the presence of acute hemorrhage.

The diagnosis of gastric, duodenal, gastrojejunal or marginal and jejunal ulcer is at times beset with uncertainty, especially when typical history and positive roentgen-ray findings are absent.

In diagnosing ulcer, I have frequently been disappointed in reading the history, not so much that it was not properly taken, but that it described symptoms that might be interpreted as a chronic appendicitis with upper abdominal symptoms, chronic cholecystitis or chronic pancreatitis. When the ulcer history is typical, as it so often is in duodenal ulcer, the diagnosis is not often missed; but in gastric ulcer it is more or less difficult to make a diagnosis from the history. In fact, I agree with Moynihan, who has said that this diagnosis can be surely made only by the roentgen ray or by sight and touch. We all know how often the diagnosis of gastric ulcer is proved wrong at operation. The most important laboratory aid is the roentgen ray, but this at times is known to fail, even when made by the expert roentgenologist. Perhaps the gastroscope, of which we have recently heard a great deal, may develop into a valuable diagnostic adjunct. The second most important laboratory aid is the presence of a very high acidity. I pay little or no attention to the stomach analysis unless it shows a very high acidity. In the physical examination I lay great stress on the presence of tenderness or pain, of more or less marked rigidity, and the presence of a mass. The string test I do not use, since I place little if any reliance on the presence of occult blood, as these are fancies and not facts. But exposing the lesion to the light of day is what I heartily advocate and practice.

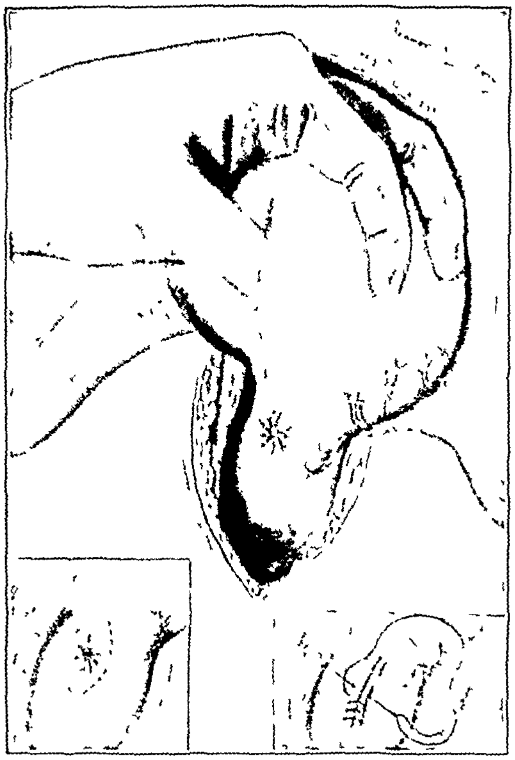
Fig 5—Excision of small duodenal ulcer near pylorus

I have recently operated on a patient for a small gastric ulcer on the lesser curvature where pylorospasm had caused pyloric obstruction. The roentgen ray demonstrated pyloric obstruction, but missed the ulcer. I did a subtotal gastrectomy. Examination of the specimen showed three-eighths inch thickening of the muscularis and submucosa of the pylorus. When at operation I palpated the pylorus I thought the enlargement might be due to a second ulcer, which, however, was not found. I have recently operated on a physician with a similar condition of the pylorus, the result of a chronically diseased gallbladder. The latter patient had had a Rammstedt operation two years before.

Subtotal or partial gastrectomy is the operation *par excellence* in early cancer of the stomach, before metastasis has occurred. I wish I could impress physicians with the value of having their patients at the cancer age, with chronic gastric ailments, who do not markedly improve after a month's treatment, undergo a comprehensive critical examination, including roentgen-ray study at the hands of the expert roentgenologist. As I have already stated, some of our best follow-up records, after four years, are in cases of this kind in which a subtotal gastrectomy had been made When all available methods of examination have been taken advantage of and they do not definitely indicate cancer, the abdomen should be explored. This is the only alternative if the disease, when present, is to be treated in the hopeful stage. Delay is dangerous, while exploration is not. If exploration fails to reveal cancer, in all probability it will disclose sufficient pathologic change to account for the symptoms, and the pathologic condition can nearly always be removed with great relief to the sufferer. This is a tenable position and will, I hope, make an impression on my hearers. A palpable tumor does not necessarily contraindicate operation, especially if it is a small movable growth at the pyloric end of the stomach. But a large movable growth at or near the cardiac end of the stomach usually forbids gastric resection.

Gastro-enterostomy in carcinoma of the stomach in the presence of a patulous pylorus serves no purpose; but when the pylorus is obstructed, it is a perfectly proper measure, provided the general condition of the patient warrants the procedure.

The rationale of subtotal gastrectomy for gastric ulcer, duodenal ulcer and early carcinoma is the removal of the pathologic condition, along with the acid-bearing portion of the stomach, thus materially lessening, if not preventing, the sequelae—future ulcer formation, which too often follows the more palliative and less radical operative procedures. In our experience, the hyperacidity which is a feature before operation is much reduced, and may even be entirely absent after a subtotal gastrectomy, as shown by the fractional test meal.

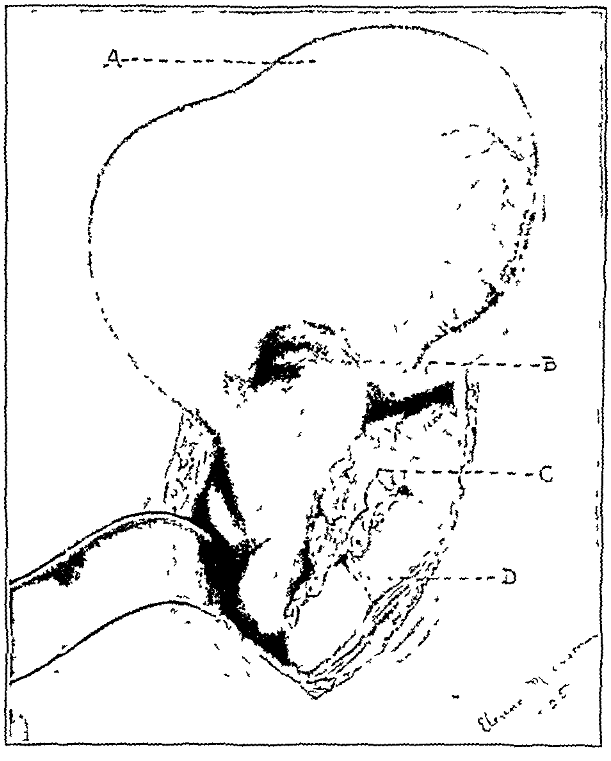

Fig 6 (Patient F)—Duodenal ulcers *A*, stomach, *B*, site of ulcers; *C*, pancreas, *D*, transverse colon

Furthermore, we have never seen marginal ulcer follow subtotal gastrectomy for early carcinoma. This may be due to the fact that cancer cases usually show a low acidity.

What I have said may not agree with the teaching of physiologists, but this does not invalidate our findings. The deductions of the physiologists are made from laboratory observations and not from the bedside study of the patients in the hospital wards.

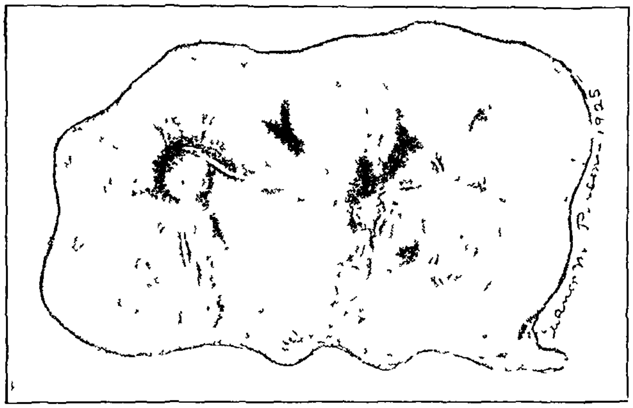
Fig 7 (Patient F) —Duodenal ulcers just beyond pylorus.

From the pathologist's point of view, too much stress has been laid on the treatment, whether medical or surgical, of the ulcer itself. It is probably a far better rationale to regard ulcers as secondary diseases, and as seldom arising in consequence of disease localized in the stomach. The data in the literature, both clinical and experimental, are not beyond criticism, yet seem to point out two things as causes of many ulcers—infection or toxemia, plus the eroding action of the gastric juice. As far as the latter is concerned, possibly too much stress has been laid on it; but too much cannot be said for infection in situations other than in the stomach.

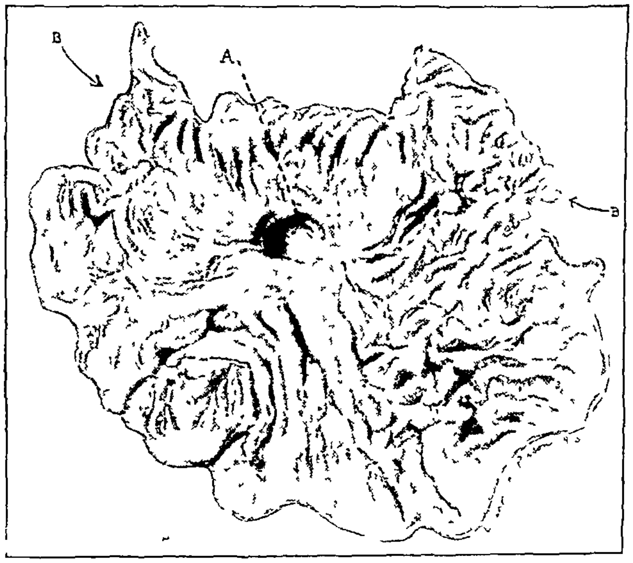

Fig 9 (Patient H).—Lesser curvature: *A*, chronic ulcer, *B*, lines of lesser curvature

Since the "normal stomach," that is, the stomach of the person without digestive complaints, may show hypo-acidity, a normal condition or hyperacidity, and those with other diseases or with peptic ulcer may show the same, it is quite probable that the rôle of the juice in the etiology of gastric and duodenal ulcers is more fanciful than real, perhaps more secondary than primary; but the gastric juice probably does help in determining the chronicity and failure to heal.

One disappointment in the literature on diagnosis and treatment lies in the fact that the pathologist finds that the diagnosis of peptic ulcer contains an error of 20 per cent. or more, and even a greater error in gastric ulcer. He also knows from both surgical and necropsy specimens that the relief or abolition of symptoms is no criterion of healing, for not all ulcers give symptoms at all times. Consequently, much in the literature regarding cures, incidence and so on has too large a margin of error to be valid.

The various operative procedures change not only the motor but also the secretory activities of the stomach. Gastro-enterostomy alone probably does heal a number of ulcers. Exactly how, it is not possible to state, for the motor function, as far as emptying the stomach is concerned, is but little affected; but the change in the chemistry may be considerable. It is not known, however, whether this is due to the reflux of alkaline intestinal juice or to changes in the secretory activities of the gastric glands. Since there are many details yet to be discovered about how the stomach secretes in health, it is impossible to say what effect operative procedures will have; but that gastro-enterostomy alone does not yield 100 per cent. perfect results is immediately evident from the numerous operative procedures that have been recommended since the introduction of gastro-enterostomy.

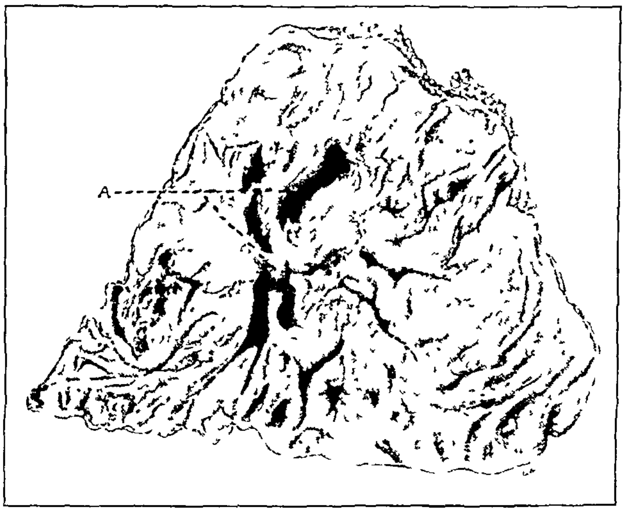

Fig 10 (Patient F) —Carcinoma of stomach *A*, ulcerating carcinoma near pylorus

In short, the problems as to etiology, as to course, as to healing, as to change in the physiology of the stomach, and as to treatment are all in an opinionated state. The experimental evidence to date is subject to many ifs. Many of the clinical reports are valueless. Since, however, we always have with us patients who demand relief from peptic ulcer, it is necessary to do the best possible under the circumstances. This can be done only by a very careful consideration of clinical findings and their subjection to statistical methods.

PATHOLOGY AND PATHOLOGIC PHYSIOLOGY

By Dr. Reimann

In much of the literature concerning the therapy, whether medical or surgical, of gastric and duodenal ulcer, the stress has been laid, if not exclusively, at least almost so, on the *treatment of the ulcer itself*. Internists have planned regimens as to diet, alkali therapy, etc.; but when one author has worked out a system to his own satisfaction, there are a dozen others who instantly modify this routine in some way or another. This is evidence that no system gives entirely satisfactory results, but that all will bear improvement. In surgery, the types of operation have undergone their changes and modifications, and at present there is only a little more unanimity of opinion than some years ago. This leads to the conclusion that surgical therapy, also, is by no means 100 per cent. perfect.

The crux of the whole situation lies in the fact that little is known of the important underlying pathologic and physiologic changes which first lead to ulcer and which secondly determine its course and future. In surgery there is the additional consideration that we have as yet no definite knowledge of the changes brought about in the physiologic and pathologic condition of the stomach by the various operative interventions. Since we do not know the fundamental causes and the factors determining the course of the disease, surgeons do not know exactly what to do; at least, up to the present, there has been no operative procedure based on any scheme of reasoning which cannot be condemned by another perhaps equally cogent logic, because the starting point of any line of arguments is always not from proved facts but from unproved, sometimes likely, and other times unlikely, theories. We have insisted for a number of years that it is distinctly advantageous to consider gastric and duodenal ulcers as secondary diseases, and not as primary conditions, of the stomach or duodenum. This, too, is a theory and an opinion; but it has the distinct advantage of not allowing us to forget the individual patient both before and after treatment, whether it be by medication or by surgery. It keeps clearly in our minds the theory that the patient had something somewhere else in his body that was important in the formation of the ulcer, and it reminds us that the patient possibly has the same factors after treatment as before, and that he may develop another ulcer if cured of one, with a return of trouble from the same original cause that initiated his first disease. As experimental facts in favor of infection or intoxication as one of the causes of ulcers—that is to say, as one of the primary conditions producing secondary peptic ulcers—we have the knowledge that in perfectly healthy animals it is practically impossible to produce a chronic progressive gastric ulcer. We must insist on this chronic progressive part of the disease as being the characteristic in human beings. Furthermore, since the first chronic progressive ulcer was produced in a dog, in about 1908, we have discovered that it is necessary to interfere with the blood supply of the stomach with some toxic substance, or to render the animal as a whole toxic or undernourished, or considerably below par, to produce a lasting ulcer.

From the point of view of the medical administration of alkalis that are intended to diminish the acidity of the gastric juice, we have conflicting experimental reports as to the action particularly of sodium bicarbonate and of calcium carbonate on the activities of the gastric glands. Some say that the flow is increased; others, that it is decreased. Some say that the acidity, if not at once, is later increased; others say that the acidity is diminished, so that the change in this portion of the chemistry of the stomach is as yet controversial. Furthermore, in our experience as in that of every other clinic, only approximating half the patients with proved peptic ulcer have hyperacidity as determined by repeated fractional test meals. Moreover, the variations in gastric secretion in normal persons, or, more accurately, in persons with no stomach complaints, are as great as those encountered in patients who complain of indigestion and other gastric symptoms. Hypersecretion and hyperacidity, and hyposecretion and hypo-acidity to complete achylia are found in normal persons. Perhaps it is unwise to call them "normal," but at least they complain of no symptoms. We cannot enter into a consideration of these things in this report, but merely call attention to them and point out that *peptic ulcers do not of themselves seem to alter the activity of the gastric glands as determined by our present-day methods, nor do alterations in activities of the gastric glands necessarily produce peptic ulcers. The rôle of* the juice in the etiology of gastric and duodenal ulcers is possibly more supposed than real. Perhaps, as Carlson suggests, the importance of the gastric juice in the maintenance of health and in the etiology of disease has been exaggerated. This is not to deny that the gastric juice cannot help in establishing, but more especially in determining, the chronicity and failure to heal of ulcers once assisted by other factors; but we are not sure that it does or does not.

For a number of years, gastrojejunostomy was considered the best surgical treatment for ulcer. That it did not answer the purpose ideally is manifest from the number of different operative procedures that have been advocated and practiced since the operation was introduced. Logically, the only reason for its performance would seem to be obstruction, and yet there are abundant clinical but very few experimental reports to indicate that this operation alone will be followed by a cure in a certain number of ulcers. By cure, we mean that the patients are relieved empirically; but, as I shall presently insist, the mere relief of symptoms is no criterion of cure of the ulcer. Irrespective, however, we have the following type of case of which there are numbers in the literature, and of which we ourselves have had a fair share.

At operation, a large ulcer is discovered at the pylorus. It is suspected that it is carcinomatous, but for reasons of surgical judgment a gastro-enterostomy is first performed to relieve the pyloric obstruction, with the hope that later a resection of the carcinoma can be done. At a second operation, several weeks later, practically no trace is left of the ulcer, or it is healed completely. The question arises as to whether the gastro-enterostomy healed the ulcer, or whether the rest in bed and postoperative regimen to build up the health of the patient, was operative, or both. All sorts of reasons have been advanced to explain this healing ability of gastro-enterostomy, but none seem adequate. There is very little change, perhaps, in the emptying power of the stomach, but there is some change, occasionally considerable, in the acidity of the gastric contents. This is probably from regurgitation of alkaline jejunal contents but also possibly from other reflex mechanisms. Since we do not know in detail how the stomach secretes in health, it is impossible to say what effect operative procedures, such as gastro-enterostomy, have on the activities of the gastric glands in disease. Consequently, we do not know how gastro-enterostomies assist the healing of ulcers; but that they do in certain instances can be accepted as a fairly well substantiated fact. I will return to the subject of healing shortly.

From the point of view of the motor effects of gastro-enterostomy, we have to consider reports from the literature which say that if the pylorus is not occluded in a short time, most of the food, if not all, passes through the normal opening, and none through the gastrojejunostomy. Further reports state that the emptying time of the stomach is not materially changed. In order to check this matter we have studied seventy-eight patients, all of whom had proved gastric or duodenal ulcers. They returned to the follow-up clinic at intervals of from three to six months, and it was found quite definitely that in many of them all of the barium passed through the new opening, and that the pylorus was functionally inactive at that time, even though at previous operation it was demonstrated that it was not obstructed by organic disease. In other patients, it was found that the new opening was inactive, and that all the barium passed through the pylorus. Finally, it was found that at one examination all the meal would pass through one opening, and at another examination all would pass through the other opening. It was also found that in some persons part of the barium passed through the gastrojejunostomy and part through the pylorus. These findings were obtained irrespective of whether the ulcer had been excised with restoration of the lumen or had been allowed to remain in on account of the technical impossibility of removing it. I will return to these seventy-eight patients in the matter of symptomatology later. My conclusion from this study is that the food of patients with gastrojejunostomy and intact pylorus may pass through either opening or both, under the influence of unknown factors.

To discuss the symptomatology is, of course, to intimate the diagnosis. The pathologist has learned through clinical diagnoses and the operative findings, as exemplified in his specimens, that the diagnosis of duodenal ulcer is easier than the diagnosis of gastric ulcer, its symptoms being much more "typical." Nevertheless, one of the most astute internists who referred patients to this institution and followed them to the operating room remarked that if he thought his patients had gallbladder disease they often had ulcer; if he thought they had ulcer they often had gallbladder disease. This is said intentionally to cast some discredit on the clinical diagnosis of gastric and duodenal ulcer, even when backed by roentgenologic evidence, for, as appears in the literature, reports of treatment and diagnosis of these conditions without actual visualization of the ulcer contain an error of varying amount, and, in our experience, seldom below 20 per cent. This, in itself, as is quite obvious, renders judgment perilous. In the symptomatology, pain is one of the most important signs of the condition, and yet it is frequently absent or at least is minor in degree. According to necropsy statistics, let us say of Osler, gastric and duodenal ulcers are found in from 2 to 4 per cent. of routine necropsies. This would mean that in the city of Philadelphia and its environs, with a population of approximately 2,000,000, there are at least 40,000 people with peptic ulcers. Many of them have indigestion, but surely not 40,000 in Philadelphia complain of the typical symptoms of gastric or duodenal ulcer. If we inquire into the mechanism by which the pain is produced, we are at once confronted with obscurity. Hyperacidity per se was thought to cause pain, but this was perhaps disproved when the stomachs of persons with gastric fistulas were rendered highly acid, whereupon no similar pain was felt. Others have related the pain to the contractions of the stomach, especially those of hunger, but this has been questioned on further investigation of more clinical cases. In fact, the whole question of pain sensation in the abdomen is unsettled. All we can say is that the pain is probably related to the proximity of the ulcer to nerve endings, the degree of swelling from exudate, the general nervous disposition of the individual and other unknown factors. We do know, however, and this quite positively, that ulcers may be present without pain. This has been found many times in our clinic by operation and discovery of ulcers in patients during the "interval"—that is to say during comparative freedom from attacks of pain—or, more important, as accidental findings. In the symptomatology, moreover, pain in attacks of from weeks to several months' duration, with relative freedom in the intervals, is quite characteristic. How, then, do we know that an ulcer is healed merely because there are no symptoms for as comparatively short times as many reports relate?

From time to time, reports have also appeared concerning the finding of scars in the stomach and in the duodenum in situations which are elected by gastric and duodenal ulcers. According to further studies, including numbers of our own, it is quite probable that when healing takes place of an ulceration which extended well into the musculature, a scar is the result. While we may therefore consider it possible that these scars at points of election in the stomach and duodenum were probably at one time ulcers, yet we must remember that the gastro-intestinal tract as a whole has marvelous powers of healing. In another publication I have called attention to this fact, and have quoted, as an example, cases of appendicitis. Patients have repeatedly been operated on in our clinic for an abscess in the neighborhood of the appendix. Because of the difficulty in removing the appendix without breaking protective adhesions, the surgeon has been content to drain the abscess. At a later interval, reoperation discovered, perhaps, a few adhesions, and in a certain number of cases, an appendix in which the microscope was necessary to find definite lesions. We have considered it highly probable that the appendix was the original cause of the abscess and that it had healed to remarkable perfection. This experience is not isolated, for personal communications with many visitors have elicited similar statements. Therefore, if scars are found in the stomach and duodenum, it by no means indicates the actual number of gastric ulcers occurring in the populace, for many may perhaps have had them, and they have healed and left no trace. On the other hand, careful examination of all the specimens removed at operation in this clinic has shown in a number in which the external experience has been that of healing that the healing had not been complete. The description of this type of case is as follows: At operation a scar is seen and felt in some part of the stomach or duodenum. The appearance from the serosa is that of healed cicatrix. We have as yet to receive a specimen in which ulceration could not be demonstrated. This question of healing, then, is also beset with problems. Many have pointed out, and I must reiterate, that the continued deposition of connective tissue, steadily or in exacerbations, and the frequent thrombosis of vessels are not calculated to render healing easy. We therefore must doubt many statements concerning cure by healing of peptic ulcers.

In view of all these conflicting opinions and statements there seems little left at present but carefully to study our clinical patients with all their sources of error and do for them what experience shows to be best. Meantime, as better controlled results are forthcoming, they can be applied.

Of these seventy-eight patients, the number entirely relieved was fifty-seven, the number distinctly improved was ten, the number unrelieved was seven, and the number of deaths four, in a minimum of two years and a maximum of five. The operations consisted of removal of the ulcer and in most cases the performance of a gastro-enterostomy. In some, the pylorus was allowed to remain as before; in others, it was obstructed either by removal or otherwise. It was found that the patients in whom the pylorus was obstructed were relieved to the individual, and that all the unrelieved patients and those improved had had a gastro-enterostomy without occlusion of the pylorus. Furthermore, it was found that in the patients who were symptomless at one examination, the barium passed through the gastro-enterostomy and not through the pylorus. If they returned six months later with symptoms, it was found that the barium passed through the pylorus. These seventy-eight patients, few as they are, and followed for so short a time, would seem to indicate that the pylorus should always be occluded when a gastro-enterostomy is done for ulcer. The symptoms endured by those patients who were unrelieved in some instances may have been due to another ulcer or to the development of a gastrojejunal ulcer. We have thought this quite possible in several; but since none of them have been operated on again, we cannot be certain that this is true.

The operation of subtotal gastrectomy is therefore now the choice. Based on a number of reasons, it removes the common ulcer-bearing areas, and it removes the pylorus and possibly relieves any tendency to hyperacidity that may happen to be present, if this condition should elude our criticism and be harmful. We have made no studies as yet on the gastric contents of these patients in our follow-up clinic, chiefly because of lack of time; however, we hope that this can be undertaken but only in patients who have been carefully controlled as to their stomach contents before operation was performed.

1634 Walnut Street—Lankenau Hospital.

Dysentery Caused by Protozoa.—Protozoal dysentery, so far as our present knowledge goes, can be caused by two species of protozoa only. The commoner of these is the rhizopod *Endameba histolytica;* the other is the ciliate *Balantidium coli.* In principle, the pathologic changes attending the invasion of the intestine by each is essentially similar. . . . *The main point to be carried in mind is that neither of these organisms, of itself, is capable of initiating an inflammatory process, nor does either produce a diffusible toxin as does Bacillus dysenteriae.* A simple infection with either, were it not for the mechanical damage wrought which opens the door to organisms which do produce inflammation, should give rise to an exudate totally devoid of pus, the main product of inflammation. . . . The mechanical damage and the digestive processes carried out by each organism lead to secondary bacterial infections of varying degrees of severity, usually slight in the case of the ciliate.—Haughwout, F. G.: Practical Microscopic Diagnosis of Dysentery.

SURGERY OF THE STOMACH AND DUODENUM

WITH ESPECIAL REFERENCE TO ULCER *

G. W. CRILE, M.D.
CLEVELAND

The special points in the surgery of the stomach and duodenum which I wish to discuss here are based on a study of the clinical histories and the results in 1,009 operations performed by my associates and myself. This number includes 519 operations for ulcer—235 for gastric ulcer and 284 for duodenal ulcer; 329 for malignant tumors—323 for carcinoma of the stomach, three for sarcoma of the stomach, and three for carcinoma of the duodenum.

RÔLE OF MEDICAL TREATMENT

The first point which I wish to emphasize is that all cases of ulcer of the stomach or duodenum, excepting those which are attended by obstruction, massive hemorrhage or acute perforation, should be first hospitalized and treated medically, for in certain types of cases a properly administered and protracted Sippy treatment will give satisfactory relief. Even if the Sippy treatment fails, the period of treatment will have trained the patient and the members of his family in the dietetic regimen for ulcer which must be followed after operation. In the case of a callous ulcer, the mass is sometimes greatly reduced by the Sippy diet so that the operative procedure is facilitated. In brief, the Sippy treatment (1) renders operation unnecessary in those cases which prove to be amenable to medical treatment; (2) it educates the patient as to his proper dietary, and (3) it makes the cases with callous adherent ulcers more operable.

RELATION OF ULCER TO CANCER

Contrary to expectation, it now appears to be the consensus of opinion the world over that cancer is grafted on a peptic ulcer in less than 10 per cent.—probably less than 5 per cent.—of the cases. The evidence in support of this conclusion consists in the end-results in large numbers of cases; on careful pathologic studies, and on the fact that, in contrast to the long protraction of the disease in cases of ulcer, the symptomatic history is brief in 95 per cent. of the cases of cancer of the stomach. That cancer has a short history and ulcer a long history suggests a double inference: (1) that ulcer is not commonly a precancerous condition, and (2) that ulcer is not especially amenable to medical treatment. In fact, the numerous instances in which the gastro-enterologist and an ulcer have been on friendly terms for many years is a convincing evidence of the failure of medical treatment in the majority of cases of peptic ulcer. If peptic ulcer were medically controllable, it could have no long history. It has been stated, in controversion to the conclusion that cancer has a short history, that if the history of the patient is investigated with sufficient persistence, a history of an antecedent ulcer can be discovered, but, on the other hand, it has been stated also that if one is sufficiently expert he can get a history of ulcer of the stomach out of any one. In any case, even if only 5 per cent. of stomach cancers are grafted on an ulcer base, this alone is an argument for wide excision of the ulcer.

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* Read before the Section on Surgery, General and Abdominal, at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925

THE ETIOLOGIC RÔLE OF HYPERACIDITY

A third point with which one is impressed in a study of his own clinical experience and of the literature regarding ulcer of the stomach is that, despite all the theories that have been advanced regarding the etiology of ulcer of the stomach, its real cause is not yet known. As Smithies has pointed out, ulcer is not the result of local factors, but behind the ulcer is the background required for its production—infection, emboli, autodigestion, overactivation due to the excessive demands of periods of stress. However, in spite of the uncertainty as to the primary cause of ulcer, a central factor is hyperacidity, for however opinions may differ regarding the causative value of hyperacidity, the fact remains that the most successful medical treatment and the most successful surgical treatment alike are directed against hyperacidity.

ANALOGY BETWEEN PEPTIC ULCER AND HYPERTHYROIDISM

The fourth point with which I have been impressed in the study of our series is the analogy between peptic ulcer and hyperthyroidism. The most striking analogies are in the incidence, both electing young adult life; in their relation to hyperactivation of the organism as a whole, for both are most prevalent in overworked, worrying, anxious persons; in their relation to general systemic conditions such as focal infection through autointoxication; in the tendency of both to chronicity and to relapse; in the fact that each is accompanied by a hypersecretion of the essential product of the organ in which it occurs; and in the fact that both the medical and the surgical attack on this condition is directed toward the diminution of the hypersecretion and to the elimination of the predisposing factors. Even in the temporizing methods that are employed by the surgeon the analogy holds, for in hyperthyroidism, ligations give temporary, and occasionally, permanent relief; in cases of gastric ulcer, gastro-enterostomy gives temporary, sometimes permanent relief, the extent of the relief from these temporizing operations in each case being in direct relation to the extent to which the patient cooperates with the physician in observing a sufficiently prolonged period of rest, prescribed diet and controlled environment. In each, however, the only sure method of final relief is the actual removal of a sufficient amount of the hypersecreting tissue plus the elimination of exciting causes plus the observance of a carefully planned regimen.

GENERAL PLAN OF SURGICAL TREATMENT

If a brief period, two or three weeks, of a strict observance of the Sippy treatment is not effective in achieving the neutralization of the hyperacidity, the hyperproduction of the acids must be attacked directly by removing a part of their source. For duodenal ulcer the best clinical results are secured by the Finney or the Horsley type of operation. If these are not indicated, then the posterior jejunostomy should be performed. The Devine operation also is of excellent promise. These procedures each achieve the desired objective in the case of duodenal ulcer. The real problem is with the gastric ulcer. The posterior gastro-enterostomy offers to the patient only a trivial reward in return for a major operation. A midgastric resection too often means an hour glass stomach, a return of the ulcer and a crippling of motility. A V-shaped resection means some crippling of the motility and but meager protection against recurrences of the ulcer. The Balfour cautery is perhaps equally ineffective. These operations usually give temporary relief, but they do not stand the test of time. They are anatomically correct but are physiologically ineffective. It is well, therefore, to change our objective from pathologic anatomy to pathologic physiology; that is, from the mere removal of the ulcer, either by resection or by side-tracking, to reducing the production of the acid secretion by excision of the gastric walls, a procedure analogous to the resection of a sufficient portion of the thyroid gland to reduce its production of hormone to the normal range.

The principal proponents of this operation are Moynihan, Finsterer, Haberer, Schoemaker and Einer Key. The result of the operation is a sharp reduction in the hyperacidity to the normal level according to the amount of stomach removed. The operative mortality is from 2 to 4 per cent., a good exchange for the morbidity and mortality of gastric ulcer and cancer. As compared with gastro-enterostomy, the relief from symptoms is as much greater as the relief of symptoms produced by thyroidectomy is greater than that produced by a ligation.

OPERATIVE TECHNIC

One critical problem of the technic indicated above is due to the fact that the large open end of the divided stomach must be anastomosed to the small intestine. Schoemaker's brilliant method provides a good and serviceable anastomosis, but in some cases this method is not suitable. After Moynihan's operation, one would fear the occurrence of an occasional dilatation and stasis, as might occur also after Balfour's modification of this method. Although each of these methods gives good results in spite of delayed emptying time after Schoemaker's operation and of too rapid emptying after Moynihan's and Balfour's modification of the Polya operation, it would seem better to use a technic that would, in effect, provide an anatomic, symmetrical arrangement of the pylorus and would establish a coordinated physiologic function as nearly like that of the original pylorus as possible.

This has been accomplished by a modification of the technic, whereby, by means of evenly distributed sutures preliminary to final closure by the cobbler stitch, the large opening in the stomach is evenly adjusted to the small opening in the jejunum. We have secured excellent results by this method, with normal emptying of the stomach.

SUMMARY

In brief, our plan of management of ulcer of the stomach, as based on these considerations, consists in preliminary trial of medical treatment.

If the Sippy routine does not provide symptomatic relief within two weeks, surgical treatment is instituted: (*a*) for duodenal ulcer, a Finney or Horsley type of operation; otherwise, a posterior jejunostomy; (*b*) for gastric ulcer, partial gastrectomy.

The principle on which the foregoing procedures are based is in accord with the treatment of hyperthyroidism; namely, resection of the stomach controls hyperacidity just as thyroidectomy controls hyperthyroidism: a change from a mechanical to a physiologic attack. The operation is safe, and the clinical results incomparably better.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. DEAVER AND REIMANN, AND CRILE

Dr. William J. Mayo, Rochester, Minn.: We have all been very much interested in this symposium because it was presented by men of experience. I could not help but be struck with something that Dr. Deaver said regarding the question of the healing of chronic duodenal ulcer by medical means, and that was the fact that these patients have had prolonged treatment before they come to the surgeon. They usually have gone through many "cures." I used to say, when asked, that a duodenal ulcer should be operated on after nine complete and permanent medical cures. I thought that the duodenum and stomach ought to have as many chances for life as a cat. The part of the duodenum that is involved in ulcer is essentially unimportant. It is said to be a part of the stomach rather than of the small intestine. It very rarely undergoes cancerous change. We have a record of only five or six cases in which a duodenal ulcer became cancerous, and in none of these cases could we be sure that it was the result of ulcer; that is, we have seen only that many primary cases. We can put aside the idea that duodenal ulcer is likely to undergo malignant change. The stomach is a happy organ for most of us and gives us many pleasant sensations. Should we remove from one half to two thirds of the stomach for an ulcer of the duodenum? No. If an operation of a conservative character fails, then it is time enough. That one can remove a normal stomach, without risk, for ulcer of the duodenum is quite sure, but why remove a normal stomach? When it comes to the plastic operation along the pylorus for ulcer or hemorrhage, the operation of Finney, permitting us to get rid of the possibility of further operation, is of value. I believe that the plastic operation is indicated in that type. With gastric ulcer, the process is different; the stomach is curable, and it does not make much difference today whether the ulcer is going to become malignant or not. I quite agree with all the probabilities about diagnosis to which Dr. Deaver referred. When we think back to the time when at least five cases out of six of supposed gastric ulcer had no treatment, we must realize that we do not make much better diagnoses today, except with the roentgen ray. Dr. Crile says that the patient who has been in the hands of a number of men can himself give a fairly good ulcer history. I think, however, we have to look at it from a different standpoint. Finsterer says that 26 per cent. of his recent cases of resection of the stomach for gastric ulcer showed carcinoma; 30 per cent. of pyloric ulcers become cancerous. Whether that is true or not, it is a safe thing to make a diagnosis and do a good operation for gastric ulcer if we expect to cure the patient. The Balfour cautery operation is a safe operation. If it does not work, if the patient has symptoms and we know it is not a carcinoma, then we can resect the stomach. In marginal ulcers, there is a different condition. If the operation has failed to cure, we can do a second operation of partial gastrectomy. That brings me to the subject of complete gastrectomy. I have had fourteen cases that were nearly complete, but in only three could I demonstrate that I had a ring of esophagus all the way round. All these cases were close to the type of leather-bottle stomach. In such cases, operation is not so difficult because the stomach drops down to the diaphragm.

Dr. Alfred A. Strauss, Chicago: Dr. Deaver and I evidently agree. I have been guilty for a number of years of doing posterior gastrectomy of the first portion of the duodenum for duodenal ulcer. No one wants to remove a normal stomach or part of a normal stomach except when there are definite lesions or an underlying process. A patient is physiologically as well off with half a stomach as with a whole stomach. Our belief has been that, if the underlying principles for gastric ulcer are correct, then the underlying principles for duodenal ulcer must be correct, as far as the reaction is concerned. More than that, the pathology of duodenal ulcer, when we have a chronically inflamed duodenum with three or four healed scars and one or two active ulcers, shows the chronic character of this condition. The symptoms that are produced by this inflamed duodenum are primarily due to the inflamed duodenum, but the actual symptoms are due to the lower half of the stomach; namely, the constant pylorospasm. To prove that this correct, in 10 per cent. of our cases the ulcer is located low down in the duodenum close to the duct, so that amputation below the ulcer is not possible. By amputation above the ulcer and by removal of the lower half of the stomach, the patient is immediately freed from symptoms. If the patient takes soda, it remains in the stomach and does not reach the ulcer; the patient is relieved because of the relief of his pylorospasm. Histologically, in over 200 resections, we have studied the posterior wall of the stomach, not the posterior wall of the duodenum; the report of chronic subacute gastritis always comes back, and so the lower half of the stomach is not quite as normal as it would appear in the operation. We had seven or eight cases of resection of the duodenum early in 1912 and 1914; these have been followed up. All the patients have gained from 15 to 45 pounds (7 to 20 kg.). Of other patients operated on in 1915 and 1916, 95 per cent. have gained in weight. We have a mortality of 5.3 per cent. following resection. These patients have not only gained in weight but are able to carry on their normal occupations. The blood picture is normal. We believe that the symptoms are due not to ulcer, but to spasm in the lower half of the stomach. A man is better off with half a stomach with which he can eat than with a whole stomach on a diet. We have not amputated as much of the stomach as Finsterer has, but a little more than half of the stomach. The objection I have to gastro-enterostomy is this: that the mortality after resection is about equal; that the clinical end-results are decidedly better and the risk is no greater. If it is true that gastrojejunal ulcer occurs in only 2 or 3 per cent., there is some argument for gastro-enterostomy, but our findings show that gastrojejunal ulcer occurs in from 20 to 30 per cent. Dr. Karl Meyer at the Cook County Hospital found 25 per cent., the men at the Mount Sinai Hospital, New York, found 40 per cent., and as we are investigating these gastro-enterostomies I think the percentage of gastrojejunal ulcers that occur following gastro-enterostomy must be higher than 30 per cent. In ten years from now we shall have to change that figure.

Dr. Moses Behrend, Philadelphia: As a corollary to our paper published in The Journal last December, we have been interested in the efficiency of the various anastomoses of the hollow viscera. We have continued our experiments in dogs, performing the various anastomoses used in man, and, strange to say, we cannot resect stomachs, do pyloroplasties followed by gastro-enterostomies with the same confidence that the dog is going to survive. For instance, a dog will live after a Billroth I operation, but after a Billroth II operation he will surely die in four or five days. The same may be said following the Polya operation. The lower in the intestine we make the anastomosis, the longer the dog will live. This work has been done by Whipple and others, but we had no knowledge of the phenomena until we started our experiments. This always lends to the interest of research work. Much has been said for and against gastro-enterostomies, resection of the stomach for ulcer, the so-called Finsterer operation. Posterior gastro-enterostomy has its field of usefulness and must not be entirely discarded. Resection of the stomach for pyloric and duodenal ulcers, especially those attached to the pancreas, is a notable operation in every sense of the word. It is better than posterior gastro-enterostomy in a large number of cases. The recovery figures have been a revelation to me. The patients are symptomless and remain so practically for all time. To illustrate that gastro-enterostomy cannot be set aside, I wish to cite the case of a patient on whom I operated last week. This man, an enlisted man in the navy, was granted a leave and decided to motor from San Francisco to Philadelphia. While in Dubuque, Iowa, he was seized with sudden severe pain in the epigastric region. He continued on his journey. He had pain continuously until he reached Philadelphia. On arrival in Philadelphia, he was admitted to the Jewish Hospital, and as soon as the abdomen was opened gas and fluid material escaped. It was evident that the appendix was not the cause of the trouble. An incision was made higher up, and more gas and fluid escaped. A hole in a duodenal ulcer was found, with lymph covering it. There was a pocket in the posterior wall. A posterior gastro-enterostomy was performed. A resection of the stomach in this instance would have been poor judgment.

Dr. J. Shelton Horsley, Richmond: Dr. Crile has admirably summed up the general principles and indications for surgery of the stomach, indicating strongly that in duodenal ulcers no routine operation should be performed in every instance. There is undoubtedly a definite field for gastro-enterostomy, a definite field for pyloroplasty and a definite field for partial or even total resection of the stomach; but there are certain borderline cases in which it is difficult to determine what particular surgical procedure should be adopted. If it lies between gastro-enterostomy and pyloroplasty, I should prefer doing a pyloroplasty, because if one has trouble after pyloroplasty, as one may sometimes, in my experience it is much easier to close the pylorus properly with a stitch of kangaroo tendon. This is a pathologic condition. A closure with kangaroo tendon that will open up in a healthy dog's stomach will sometimes hold for a long time in a patient's stomach. I had one such case last year. I closed the pylorus and then did a gastro-enterostomy. This is a much simpler procedure than to disconnect a gastro-enterostomy and then do a pyloroplasty and resection. Like Dr. Mayo, I should certainly not want a complete gastrectomy done on me for a small lesion in the duodenum, until some smaller operation has been tried and failed. For the last year, I have adopted a modified Billroth I operation. I was much interested in hearing Dr. Behrend say that in the dog a Billroth I operation is successful, when the animal usually will not survive the other types. This we should expect, and if we try as near as we can to restore the physiologic conditions, the ultimate results will be better. I have found in my limited experience that the stomach will come over very easily. It may be that there will be some little traction about the gastrohepatic omentum This portion of the stomach can very easily be anastomosed to the duodenum. I have two objections to the Billroth I: one is that it is along the greater curvature of the stomach, and physiologists tell us that the nucleus of peristalsis is around the greater curvature. The second objection is that if one anastomoses it at that point, one is likely to have an obstruction. We have the suture line at the beginning going back and forth posteriorly. We split the anterior wall of the duodenum for about an inch. In many instances we make it wide enough to take up the stump of the stomach. This end can be pulled in by a purse-string. That gives as nearly as possible a normal functioning stomach, with the occlusion of a very large portion of it. Suturing is reasonably safe, because we have turned in a big edge and we have reinforced it by omentum.

Dr. John B. Deaver, Philadelphia: We must not be too radical. I have operated and reoperated on a sufficiently large number of patients with marginal ulcers to know when they are bad. I have operated on a sufficient number of patients with ulcers that have bled after posterior gastro-enterostomy, and some of them have bled to death. I have one patient at present on whom fusion has just been done; he had a posterior gastro-enterostomy done seventeen years ago and has been well since. Our diagnosis of a bleeding marginal ulcer may be correct, but it may be that he is bleeding from his original duodenal ulcer; he is too sick to have a roentgenogram taken, but he is gradually bleeding to death through his intestinal tract. In five or six years from now, we may have views entirely different. The question is far from settled, but I am not satisfied with posterior gastro-enterostomy; I am not satisfied with excision; I do not believe that we can solve this problem until we remove the acid-bearing portion, if we do remove the acid-bearing portion in making subtotal gastrectomy. In the absence of complications, such as adhesions to the pancreas, this operation is simpler than a posterior gastro-enterostomy. The postoperative recovery of these patients is astonishingly good. Rarely do I have to have a stomach washed out after that operation. Frequently I have to have them washed out after posterior gastro-enterostomy.

Dr. George W. Crile, Cleveland: As a rule, we all feel that when one speaks of research it is guinea-pig research. From my point of view, the most valuable as well as the most difficult researches are the clinical end-results. It is a tremendous labor, and yet we cannot judge of our results until we go back over our cases and see what happens to our patients who had ordinary gastro-enterostomies, sleeve resections, etc. If we are to take the results for the first six months, almost any operation on the stomach for gastric ulcer seems to be successful; after a year they appear a little less successful, and then the success diminishes with the lapse of time. It is because of the long end-results that we have felt obliged to change our point of view. Dr. Mayo has discussed the very center of the problem of gastric ulcer. It is too true that it is impossible to make a correct diagnosis or a differential diagnosis between ulcer and cancer of the stomach by the clinical history. For that reason, it is important to develop evidence as to the length of time of the operation, the duration of symptoms, etc. I have had cases in which the history and roentgen-ray findings seemed to indicate ulcer of the stomach, and which at the time of operation I thought were ulcer, but they proved to be carcinomas, and vice versa. I have been perfectly confident that a case was a cancer, did a temporizing gastro-enterostomy and found the patient living for ten or fifteen years, which simply means that the original diagnosis was wrong clinically and from a roentgen-ray standpoint. When we examine a patient at the time of operation, our difficulties do not end. If we remove a mass of cancer or ulcer of the stomach and give it to the pathologist, he will not always accurately diagnose the condition. It is no reflection on the pathologist to say that he has failed to make the correct diagnosis in all cases. As a matter of fact, if one were to take the same specimen and give different parts of it to different pathologists from the gross material and from the slides, one would be apt to get a great confusion of opinions. I have been a number of times greatly confused in important situations on the different opinions from pathologists on sections in which one would suppose they could make a correct diagnosis. Wide resection, as now made, gives very good clinical end-results; up to now, far better than any I have seen. Perhaps a wider, earlier resection will improve the results as far as cancer is concerned.

Mortality Rates.—The Metropolitan Life Insurance Company presents the mortality experience of the industrial insurance department of the company for May and June, 1925, as compared with June and the year 1924. The continued decline in the tuberculosis death rate is credited with being the most important single item. The death rate for the epidemic diseases of childhood—measles, scarlet fever, whooping cough and diphtheria—as a group dropped 35 per cent. from the figure for 1924 for white persons, each disease registering a decrease. Among the colored, however, the rate increased slightly for three of these diseases—scarlet fever, whooping cough and diphtheria. Infantile diarrhea also showed improvement among the white children, as contrasted with a rise in the rate among the colored. The combined death rate from the principal "degenerative diseases" shows a decline among the white persons of this group, although the rates for cardiac conditions and nephritis are slightly higher than for 1924; here again the rate for the colored is less favorable in comparison with that for the white policyholders. The death rate for diseases incident to pregnancy and childbirth shows a considerable reduction in the first half year of 1925 from that for the corresponding period of 1924; this decrease applies to both white and colored women. The death rate for puerperal septicemia increased among the colored women of this group, the rate for the first six months of 1925 being 23 per cent. higher than that for the corresponding period of 1923, and 14 per cent. above that for 1924 The cancer death rate shows no significant change. The death rate for diabetes again registers an increase. Alcoholism caused 230 deaths during the first six months of 1925 (2.8 per hundred thousand) as compared with 236 deaths for the corresponding period of 1924 (3 per hundred thousand). Cirrhosis of the liver rose from 475 deaths in 1924 to 548 in 1925 (from 6 per hundred thousand to 6.7).—*Pub. Health Rep.* **40**:1812 (Aug. 28) 1925.

SPONTANEOUS DISAPPEARANCE OF DIABETES

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In certain patients with diabetes, I have often noted such a markedly increased carbohydrate tolerance that it seemed almost equivalent to a cure, but up to the present time, in no case have I had sufficient scientific evidence to prove that a case was definitely cured. Recently I have been able to collect sufficient data in two cases of diabetes associated with acromegaly to afford a basis, with the data on a few other cases that have recently appeared in the literature, for serious consideration of the possibility of effecting a cure in certain cases of diabetes.

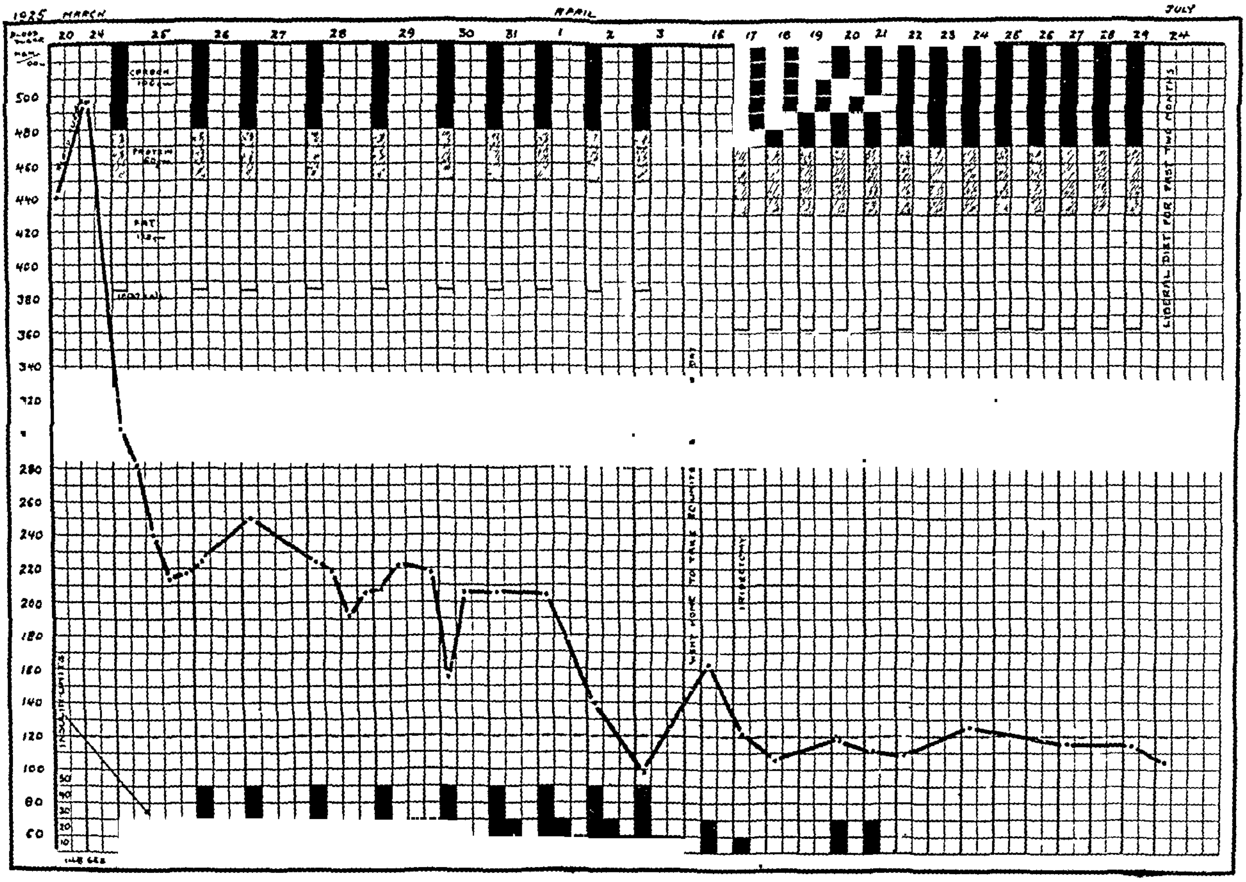

Chart 1.—Observations in case of diabetes associated with acromegaly showing apparent cure of diabetes.

Thus, Joslin reports a case of diabetes in a little boy who first showed sugar in the urine at the age of 7, although symptoms of diabetes had been present during the preceding year. His mother also had had diabetes. On a diet that was practically normal except for some restriction of sugar, he remained sugar free for fifteen years, although his weight was always somewhat subnormal.

Von Noorden reports the case of a boy, aged 7 years, with diabetes, who even when on a strict diet constantly excreted from 20 to 30 gm. of sugar and considerable quantities of acetone. On an oatmeal and vegetable diet, he became sugar free. At the age of 12, when again seen by von Noorden, he was eating an ordinary diet, was in perfect health and did not show a trace of glycosuria.

Boyd and Robinson have recently reported the case of a boy, aged 9 years, who had had diabetes since he was 2 years old. Under treatment with insulin, he improved remarkably and his carbohydrate tolerance increased markedly, being trebled in a year, when the insulin was reduced from 90 to 30 units daily. The authors state that "from a chronic invalid in 1922 he became the leader of a 'gang' in 1923, and he was killed by fracturing his skull when sleigh-riding. He lived only about three hours after receipt of the injury and an immediate postmortem examination was made," at which the authors found actual regeneration of the cells of the islands of Langerhans. Such a case is very instructive, suggesting the possibility of regeneration or formation of new islands in the pancreas on insulin therapy.

This case supplies an important corollary to the important work of Copp and Barclay at the Physiatric Institute. These investigators have shown that in dogs in which a diabetic status was induced by the ablation of a large portion of the pancreas, and by overfeeding, if the damage to the islands of Langerhans had not progressed beyond the stage of hydropic degeneration of the beta cells, the process could be reversed by a proper dietetic treatment or with insulin, if necessary. That is, what seemed to be a restoration of the islands took place with resultant functional improvement. It would appear, therefore, that the destructive change in the islands of Langerhans to which diabetes is due, up to a certain stage, may be considered as a reversible process.

To the foregoing reports from the literature, the following case histories are added:

REPORT OF CASES

Case 1.—A man, aged 55, came to the clinic in March, 1925, complaining of general weakness, intense thirst and polyuria. The patient had had none of the diseases of childhood, but had had pneumonia and rheumatism in later life. At the age of 22, his head was injured and his leg broken in an accident. In 1924, he had some teeth extracted. Apart from the rheumatism, the patient had been fairly well until December, 1924, about three months before I saw him, when he had an attack of hiccup which lasted for five days, and glycosuria was discovered by the family physician, who had treated him for the past two months with insulin. At times, he had double vision and the eyelids drooped a little. On exertion, he had some dyspnea and the rectum frequently prolapsed. During the preceding three months, he had lost 37 pounds (16.8 kg.).

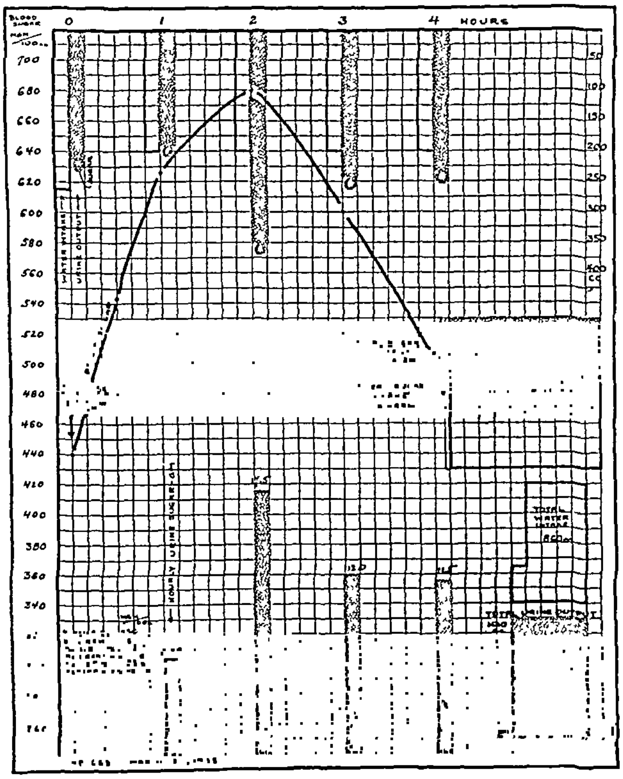

Chart 2.—Glucose tolerance curve of patient whose progress is illustrated in Chart 1, on admission.

The patient was tall, 6 feet 1 inch (185 cm.) in height, weighing 203 pounds (92 kg.), with coarse features and large joints and fingers of the acromegalic type. There was marked hypertrophic arthritis of the hands. The roentgen ray revealed Heberden's nodes on the fingers. The pulse rate was 104; the systolic blood pressure was 105; diastolic, 78. The scalp was very thick and wrinkled, with supra-orbital ridges; the cheeks and jaws were very prominent.

The growth of the skull, hands and feet during the preceding ten years is shown by the following comparative measurements:

	Hat	Glove	Shoe	Shirt
1915............	7⅜ inches	No. 10	No. 9	16½
1925............	7⅝ inches	No. 13	No. 12	17½

Roentgen-ray examination showed a large sella turcica.

Laboratory examination of the urine revealed: sugar, 5 per cent.; acetone, 4 plus; diacetic acid, plus; a trace of albumin; a few hyaline casts. Blood examination revealed: red blood cells, 4,550,000; white blood cells, 5,900; hemoglobin, 85 per cent.

On the day after admission, a glucose tolerance test gave the findings presented in Table 1 (Chart 2).

In this case, it was not necessary to make a glucose tolerance test in order to confirm the diagnosis of diabetes, as the presence of a 5 per cent. glycosuria with a fasting blood sugar value of 440 mg. per hundred cubic centimeters is sufficient evidence of the condition; but in view of the statements by the patient's physician that insulin had not benefited him at all, nor had a month's treatment with pituitary extract helped him, the glucose tolerance test was made for final proof. It was evident that the prime need was to treat the diabetic condition. He was, therefore, placed in our diabetes hospital on a diet of 100 gm. of carbohydrate, 60 gm. of protein and 128 gm. of fat, a total of 1,800 calories, on which he gained 5 pounds (2.3 kg.) during the first twenty-four days, but later lost 10 pounds (4.5 kg.). He received an average of 100 units of insulin each day in four doses, 40, 20, 20 and 20 units, respectively, for ten days, at the end of which time the blood sugar had reached the normal level. He then received 20 units daily for about two weeks, and only three more doses after that time. April 17, the diet was increased to 120 gm. of carbohydrate, 80 gm. of protein and 133 gm. of fat, a total of 2,000 calories, and the insulin was discontinued. As Chart 1 indicates, the patient kept a normal blood sugar level until he was discharged, April 29. During his stay in the hospital, the twenty-four hour sugar output in the urine was as follows: March 25, 78.75 gm.; March 26, 27.00 gm.; March 27, 1.54 gm.; March 28-30, a trace; after March 31, none.

Table 1.—*Glucose Tolerance Test in Case 1, March, 1925*

	Before	½ Hr. After	1 Hr. After	2 Hrs. After	3 Hrs. After	4 Hrs. After
Blood sugar before and after ingestion of 100 gm. glucose in mg./100 c.c.	440	543	626	680	600	506
Sugar in urine, in grams	3 plus		6.27	17.5	12.0	11.5
Total water intake..............................						860 c.c.
Total urine output..............................						1,010 c.c.
Total sugar intake..............................						100 gm.
Total sugar output..............................						*47.27 gm.*
Corpuscle volume at beginning of test....................						36 per cent.
Plasma chlorids						530 mg./100 c.c.
Blood urea						51 mg./100 c.c.
Blood uric acid........................						2.7 mg./100 c.c.
Blood creatinin						1.6 mg./100 c.c.
Nonprotein nitrogen						55.6 mg./100 c.c.
Plasma acetone						Trace

Double iridectomy was performed, April 17, as the patient had developed acute cataracts in both eyes, and one lens was removed a few days later. The cataracts developed very rapidly; on entrance the lenses were clear, but within a few days a lenticular change began, the progress of which could be seen from day to day, although the diabetic condition was getting better and was completely under control—a surprising circumstance, as one would expect that the control of the diabetic condition might prevent any further retrogressive eye changes. The visual fields could not be measured on account of the cataracts.

The report of Dr. Ruedemann of the ophthalmologic department was as follows:

March 20, the vision of the right eye on entrance was 6/15; the vision of the left eye on entrance was 6/20. The vision was improved with a plus 2 lens to 6/10; tension (Schiötz) was 25 in both eyes and the examination revealed early lenticular changes in both eyes with no changes in the disk of the retina.

April 3, there were heavy central opacities, with the vision reduced to 6/60 and not improved with glasses. There were no changes in the fundus.

April 17, a double iridectomy was performed which did not materially improve the vision, so the right lens was extracted.

This is a typical case of the association of diabetes with acromegaly. Because of the acromegaly, the diabetic status had not been recognized, the polyuria being considered to be due to the pituitary deficiency, although pituitary extract did not improve the condition, which grew worse daily.

The possible relation of acromegaly to diabetes offers an interesting field for discussion, and will be considered in another paper, as it is not pertinent to this report, in which we are considering only the cure of the diabetic condition.

Table 2.—*Glucose Tolerance Test in Case 1, July 24, 1925*

	Before	½ Hr. After	1 Hr. After	2 Hrs. After	3 Hrs. After	4 Hrs. After
Blood sugar before and after ingestion of 100 gm. of glucose in mg./100 c.c.	105	158	168	125	74	60
Urine sugar	Neg.		Neg.	Neg.	Neg.	Neg.
Total water intake..............................						1,040 c.c.
Total urine output..............................						465 c.c.
Plasma chlorids						585 mg./100 c.c.
Blood urea						21 mg./100 c.c.
Blood uric acid..............................						1.9 mg./100 c.c.
Blood creatinin						1.1 mg./100 c.c.
Nonprotein nitrogen						25.7 mg./100 c.c.
Plasma acetone						Negative

The patient was seen by me again nearly three months later. During the interim, he had been living on a liberal diet which he did not weigh, practically the only articles he had eliminated being sugar and pastry. At that time, his fasting blood sugar was 105 mg. per hundred cubic centimeters, and he had no glycosuria. I then made another glucose tolerance test (Table 2), and, to my astonishment, secured a normal curve (Chart 3), the first one that I have encountered in a diabetic patient in the years I have been observing them.

The clinical progress, together with the blood sugar estimations, suggested a very marked improvement, which was verified by the glucose tolerance test. The normal glucose tolerance curve showed that the functional capacity of the islands of Langerhans had been restored to normal. In other words, the diabetic condition had been "cured." Whether or not the insulogenic function will remain normal or whether it will again become impaired under some undue strain, of course, cannot be stated at this time; but as this case is followed, the permanence of the cure will be determined.

Case 2.—A married woman, aged 37, sent in by her physician because of glycosuria, had no familial history of diabetes. In childhood, she had had measles, mumps, chickenpox and scarlet fever; later in life an attack of influenza.

Six weeks before, she had consulted her physician because of thirst, polyuria and pruritus vulvae. A heavy glycosuria was found, and two hours after eating, the blood sugar was 280 mg. per hundred cubic centimeters. As the result of absolute fasting for two days, the thirst and frequency of urination cleared up, the pruritus disappeared in a few days, and the urine became sugar free. The diet was gradually increased, and the physician wrote that he found it necessary only to curb her intake of candy and sugar.

Table 3.—*Observations in Case 2*

June	16	19	20	21	22	23	24	25
Diet:								
Carbohydrate .	...	100	100	100	200	200	200	200
Protein	...	60	60	60	70	70	70	70
Fat	...	128	128	128	157	157	157	157
Calories	...	1,800	1,800	1,800	2,500	2,500	2,500	2,500
Fasting blood sugar, mg./100 c.c.	133	89	83		76	95	96	98
Urine sugar, 24 hours, gm.	Plus		Neg.			Trace	7.5	

The history of glycosuria and hyperglycemia seemed quite typical of diabetes. On examining the urine, I found glycosuria present, and the blood sugar three and a half hours after a meal was 133 mg. per hundred cubic centimeters (Myers-Benedict method). It appeared to me, therefore, that this was either a borderline case or one of mild diabetes, and it seemed advisable to observe the patient closely for a time in order to safeguard her from any future catastrophe. I therefore placed her in the hospital, and gained the information presented in Table 3.

The data show clearly that when the patient was first seen by her family physician, she had a typical case of diabetes. The rigid routine cleared up the condition, which was kept in check by careful adherence to the prescribed diet. It is clear now that if a diet consisting of 200 gm. of carbohydrate, 70 gm. of protein and 157 gm. of fat, a total of 2,500 calories, does not increase the blood sugar content, the carbohydrate tolerance is restored, and is normal.

This appears to have been an early stage of diabetes of the functional type, in which, when the strain on the pancreas was lightened by the strictly controlled diet, the islands of Langerhans had a chance for restoration to their normal status. It should be borne in mind, however, that a "cure" of diabetes can occur only in the exceptional and very early cases, before much damage has been done to the islands. Nevertheless, it is encouraging to know that by rigid treatment instituted as soon as the disease is recognized, such cases as these may be restored to a normal status.

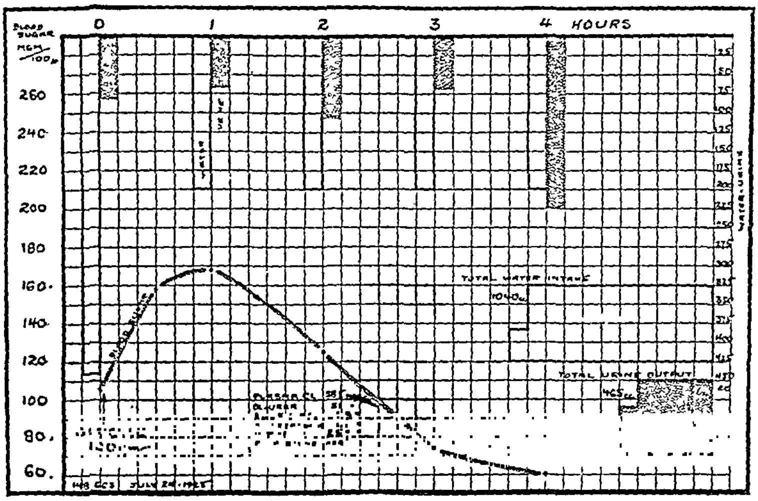

Chart 3.—Glucose tolerance curve of patient whose primary curve is shown in Chart 2, four months later.

CONCLUSIONS

1. Theoretically, the cure of diabetes is possible, provided the destructive process in the islands of Langerhans has not progressed beyond the reversible stage.

2. In the two cases here reported, a cure appears to have been established, as is indicated by the normal glucose tolerance curve secured in the first case, and in the presence of normal blood sugar values on a very heavy diet in the second.

3. These cases add further evidence to the cases of apparent cure previously reported in the literature, and to the experimental work of Copp and Barclay in support of the belief that up to a certain stage the diabetic process is reversible.

PARATHYROID EXTRACT IN TREATMENT OF A CASE OF TETANY*

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In view of Collip's recent work, the case reported here, in which parathyroid extract was used, will probably be of interest to the medical profession.

A woman, aged 54, came to the Mayo Clinic in July, 1921, complaining of a large goiter of twenty years' duration, and arthritis of five years' duration. On physical examination she appeared extremely nervous, with a warm moist skin, a positive Graefe's sign and a fine tremor of the hands. The pulse rate was 140; the systolic blood pressure was 170, the diastolic, 95. There were multiple adenomas of the thyroid; the right lobe measured 7.5 by 5 cm. and the left 5 by 5 cm.; no bruits or thrills were detected. The joints, particularly of the upper extremities, showed a moderate chronic infectious arthritis. Two teeth showed periapical infection; the tonsils were apparently normal. Urinalysis, blood count, Wassermann test, and electrocardiograms were negative. Roentgenograms of the chest, hands and knees showed nothing of importance. Thyroidectomy was advised. A basal metabolic rate determination had been ordered, but the patient was unable to remain for this; she agreed to return later for operation and further treatment.

She returned to the clinic three years later, complaining of marked general weakness and extensive deformity of the joints. A thyroidectomy had been performed elsewhere, shortly after she visited the clinic. Three days after operation she had developed cramps in her hands and feet, which drew her fingers together, and rotated her hands inward, flexing them on the wrist. The cramps lasted about fifteen minutes, and were relieved spontaneously. The patient could not remember what changes were noted in the lower extremities, and does not recall having generalized convulsions. Each of the attacks was preceded by prodromal symptoms of extreme warmth, tingling sensations in the hands and feet, and twitching of the muscles of the face. She had several seizures of this type over a period of about three weeks after operation; thereafter they were less frequent. There had been no attacks since March, 1924. Since the operation, the patient had been on a general diet with a good deal of milk and vegetables, but she did not remember taking any calcium preparation. As she recovered from the thyrotoxic state and the immediate effects of the operation, she noticed rather marked weakness and nervousness. Her arthritis also seemed to become worse, and for a period of nearly three years she had been almost totally incapacitated. A tonsillectomy, performed a year after thyroidectomy, had been of no benefit.

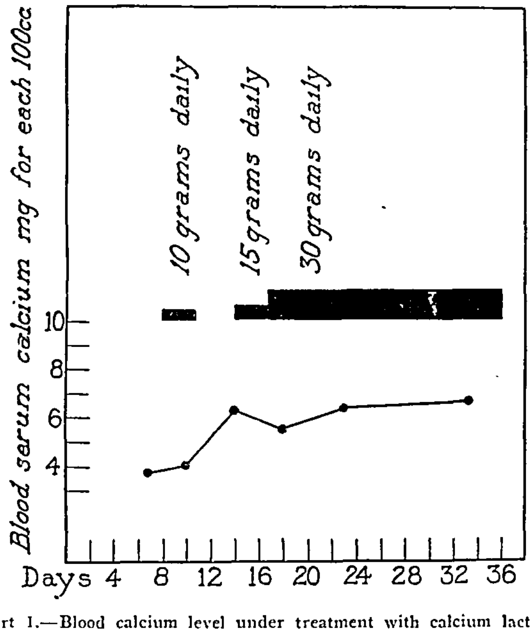

Chart 1.—Blood calcium level under treatment with calcium lactate.

On examination, the emaciation, weakness and muscular atrophy were striking. The arthritis had undoubtedly progressed, but no serious deformity was noted except that of the hands. Diffuse lens opacities had developed in both eyes. The pulse was 88; the systolic blood pressure was 174, the diastolic, 102. There was a mild secondary anemia, with a hemoglobin of 69 (Dare), and the erythrocytes numbered 3,880,000. The basal metabolic rate was + 3. Other laboratory tests were negative. Roentgenograms of the hands and right knee showed definite destructive arthritis. An orthopedic consultant felt that the arthritis was hardly sufficient to account for the disability present, and advised that the patient go to a hospital for further observation and treatment. While at the hospital, a positive Chvostek's sign was demonstrated, but Trousseau's sign was absent. The blood calcium was found to be 4.8 mg. for each 100 c.c. A diagnosis of parathyroid tetany was made, and treatment was instituted at once.

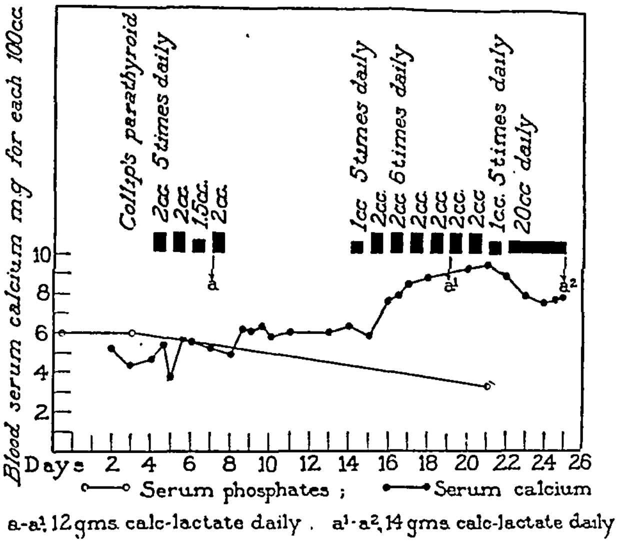

Chart 2.—Blood calcium level under treatment with parathyroid extract and calcium lactate.

Under massive doses of calcium lactate the patient improved satisfactorily, but the blood calcium level did not rise above 6.7 mg. She gained in weight and strength, and within three weeks was able to get about without assistance. At the time of dismissal, Chvostek's sign was present, but much less marked (Chart 1). While at home she continued a diet with high calcium content, as well as calcium lactate by mouth. The arthritis improved steadily under physiotherapy and small doses of Coley's serum. She continued to gain in strength, and by March, 1925, she was able to ascend a flight of stairs unassisted; at this time her physician ordered a blood calcium determination, and on finding it to be 9.2 mg.[1] for each 100 c.c., discontinued the calcium. He noticed a marked increase in nervousness and excitability after a few days, necessitating a return to the former treatment.

The patient was advised of the development of an active parathyroid extract[2] by Collip,[3] and was requested to return to the clinic for further observation and treatment in April, 1925. On admission, an attempt was made to study her calcium balance; but, as soon as the drug was withdrawn and an ordinary diet resumed, symptoms of tetany developed. She complained of great weakness and restlessness, sensations of extreme warmth and tingling in the extremities, and generalized muscular twitchings were noted, affecting principally the facial muscles. Calcium lactate relieved these, but did not raise the blood calcium to any appreciable extent. At this juncture all medication was discontinued and treatment with Collip's parathyroid extract instituted, the method of "pyramiding" being used. From 1 to 2 c.c. of the extract was given subcutaneously every two hours, a total of from 5 to 10 c.c. each day. A daily rise in blood calcium was noted, and the average level tended to rise, without, however, reaching normal levels. The diet was maintained at a constant level throughout. Subjective improvement was marked; the patient's restlessness and excitability decreased, and Chvostek's sign was elicited only with difficulty.

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* From the Division of Medicine, Mayo Clinic and the Mayo Foundation.

[1] The accuracy of the figure 9.2 mg., obtained while under treatment at home, is rather doubtful.

[2] Parathyroid extract was furnished us through the courtesy of its discoverer, Dr. Collip, and the Eli Lilly Company.

[3] Collip, J. B.: The Extraction of a Parathyroid Hormone Which Will Prevent or Control Parathyroid Tetany and Which Regulates the Level of Blood Calcium, J. Biol. Chem. 63: 395-438 (March) 1925.

On the resumption of calcium lactate by mouth, the injection of the extract was discontinued; under this method of management, the serum calcium was relatively constant and the patient appeared to feel fairly well. From 10 to 15 gm. of calcium lactate and 10 c.c. of the parathyroid extract were then given daily. The conjoint use of the two drugs resulted in a rise of the blood calcium to normal, with complete disappearance of every sign and symptom of tetany.

The development of urticaria on the twenty-fourth day caused the discontinuance of the parathyroid extract injections, and substitution of a double quantity by mouth. As might be expected, there was a slight temporary decrease in the blood calcium. The dosage required to maintain a constant level was 14 gm. of calcium lactate daily, with 1 c.c. of parathyroid extract subcutaneously five times a day. Chart 2 illustrates the dosage of the drugs employed, with the variations in the blood calcium level.

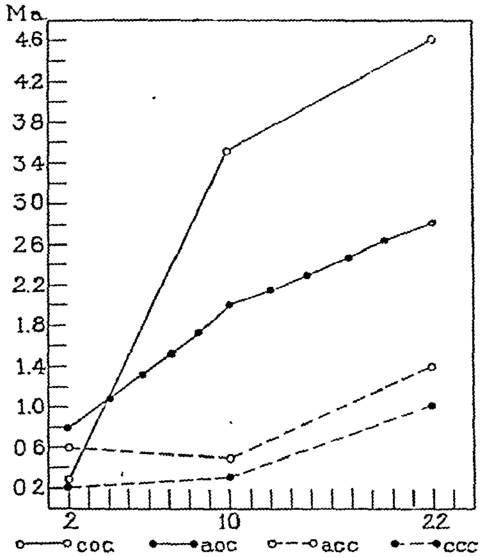

Chart 3.—Decrease in electrical excitability of the peripheral nerves while under treatment.

Through the cooperation of Woltman and Moersch of the Section on Neurology, we were able to follow the changes in the patient's electrical reactions. Chart 3, which represents the reactions in terms of milliamperes of current required, shows very well the decrease in excitability under treatment.

COMMENT

This case illustrates the effect of Collip's parathyroid extract on the blood calcium level in a clinical case of chronic parathyroid tetany. The marked clinical improvement, the decrease of electrical excitability, and the disappearance of the signs and symptoms of tetany attest the therapeutic value of the substance. The rather large dosage required may possibly be attributed to the relatively low potency of the preparation used. The element of chronicity and lowered calcium metabolism over so long a period in this case must be further considered a cause for the relatively slow increase in blood calcium. It is evident, however, that calcium lactate administered alone in maximal doses did not produce and maintain a normal level of blood calcium. The same is true of the dosage indicated for parathyroid extract alone. The combined treatment of calcium and parathyroid easily sufficed to attain and maintain a normal blood calcium level, and coincidently to cause the disappearance of all the signs and symptoms of tetany. The patient feels normal for the first time since the onset of her illness. Treatment is being continued under the supervision of her home physician.

BASAL CEREBRAL HEMORRHAGES *

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During the last century, it was not uncommon to find in medical literature references and reports in regard to cases of basal cerebral hemorrhage. However, recent literature on the subject in the United States is remarkably limited. In most of the few cases cited, attention is paid to the fact that the lesion was discovered accidentally, a condition that leads us to conclude that this type of hemorrhage is much more frequent than is realized, more frequent at any rate than is recognized in diagnostic statistics. Because of the history of a fall or other form of trauma, these cases often find their way into the surgical ward of a hospital, or because of a nuchal rigidity and occipital headache they are treated as frank cases of meningitis.

Sydney Smith [1] cites an instance of a patient brought in and treated for opium poisoning, a diagnosis in which all attending physicians concurred, and the true nature of which—a ruptured aneurysm of the basilar artery—was discovered only on the necropsy table. Two very comprehensive reviews of the subject of cerebral aneurysms have been published during this century by Wichern,[2] who reports twenty-one personally observed cases and includes all the varieties of aneurysm; and Fearnsides,[3] who published the results of forty-four cases of intracranial aneurysms. Both these authors point out the importance of the diagnostic signs with which this paper is concerned, and insist that in cases of rupture with slow leakage the diagnosis can be made some time before death.

We feel, therefore, that it may be of some interest to present for consideration a series of four cases wherein the diagnosis was made before death, and we have incorporated into the presentation of these cases the most salient points found in the literature on the subject.

During our service, we have noted other cases which we were reasonably assured were typical basilar hemorrhages, but as no necropsies were held, we have intentionally refrained from including them in this connection.

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* Read before the Section on Nervous and Mental Diseases at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] Smith, Sydney: Aneurysm of the Basilar Artery, Simulating Opium Poisoning, Brit. M. J. **1**: 994 (June 7) 1924.

[2] Wichern, H.: Zur Diagnose perforierender Aneurysmen der Hirnarterien, Munchen. med. Wchnschr. **58**: 2724-2729 (Dec. 19) 1911.

[3] Fearnsides, E. G.: Intracranial Aneurysms, Brain **39**: 224-296 (Oct.) 1916.

ETIOLOGY

In studying this series, we are confronted with the fact that they all occurred in the male sex. This disproportion has been noted in the literature, the average being 2:5 or 3:1, and Hoffman believes that it is because of the greater diameter of the vertebral and basilar arteries in women. But as trauma and syphilis play an important part in the production of leaks in these vessels, it is almost axiomatic that there should be a greater incidence in men. Another striking point is that the average age for the occurence of these leaks is much lower in men than women: 40 and 50 for men, and 60 and 70 for women.

If a conclusion may be drawn from the foregoing data, it would be fair to assume that arteriosclerosis and hypertension were probably the predominant factors in producing these hemorrhages in women, while in the male sex there must be other factors. With syphilitic vascular lesions, however, there are usually associated syphilitic aortitis and occasionally aortic insufficiency. Because of the aortic insufficiency, some pathologists have considered that an associated hypertension, with fragile syphilitic cerebral vessels, was the most prominent causative factor. At this point, it must be taken into consideration that in syphilitic aortitis the blood pressure is seldom high, for in these lesions it is the media or adventitia that is involved and only remotely the intima. As a consequence, the heart is not hypertrophied but actually remains small, and it is only when the complications of aortic insufficiency or chronic nephritis are superimposed on the syphilitic aortitis that hypertension becomes a factor.

To correlate the etiologic and pathologic factors that produce the hemorrhages, aneurysm, miliary or otherwise, assumes a most prominent position. Primary medial degeneration of the arterial wall, very often congenital, is, in our opinion, the paramount cause.

Arteriosclerosis furnishes a marked predisposition to this type of hemorrhage. The conditions, which are either causative or associated with arteriosclerosis, must play some rôle, such as chronic nephritis, hypertension, gout, lead and syphilis. Syphilis is considered by many to be the most frequent cause. In our series it was proved in only one case. Our studies of the literature bring the percentage of proved syphilis to about 20 per cent. Then, again, it must be remembered that syphilitic patients may have other conditions that are really responsible for these ruptures.

Embolism from a bacterial endocarditis must be always thought of in ruptures, particularly in young patients. In what manner trauma plays its part is really unknown, but that it must have an important part in producing an aneurysmal formation is conceded by all pathologists. It is also known that in contrast to the arteries of the extremities, with their strong media and adventitia, cerebral vessels show structurally thin walls with a paucity of elastic elements.

As we are concerned with the clinical picture preceding either immediately or remotely fatal termination by the escape of large amounts of blood from the ruptured artery or aneurysmal sac, it becomes obvious that the signs and symptoms producing this picture will result in the case of an aneurysm from direct pressure of the sac on the contiguous parts of the brain, or else by the reactions of the meninges to relatively small amounts of blood which have leaked through the ruptured wall, and burrowed under the arachnoid along the path of least resistance. The latter course is, we believe, invariably accompanied by a more or less violent meningeal reaction which frequently masks the whole picture and suggests in a remarkable way one of the forms of meningitis.

The onset is usually apoplectiform, but it may be characterized by certain prodromal signs indicative of general cerebrovascular disturbances. Whether these are in the nature of a widespread vascular shock at the time the wall begins to let go, or whether the leakage having already begun, it represents the action of the meningeal sympathetic fibers, we are unable to say; but in any event a severe meningeal reaction, i. e., nuchal rigidity and bilateral Kernig sign with or without tenderness of the muscles and nerve trunks, is very characteristic of this state, and if the cerebral shock is not too severe, invariably present.

REPORT OF CASES

The following case histories may be cited in detail:

Case 1.—A truck driver, aged 26, single, who on the afternoon previous to admission to Gouverneur Hospital had become confused, noisy, delirious, and that same night was found unconscious on the floor, soon after admission had a generalized convulsion during the day, followed by three similar convulsions that night. Examination of his physical status showed deep coma, with a pulse rate of 115 and blood pressure of 160 systolic and 90 diastolic. The pupils were dilated and did not react to light; the fundi were normal, except for venous engorgement. There was spasticity of the right arm and leg, with occasional muscular twitchings; also marked nuchal rigidity and bilateral Kernig sign. The triceps and biceps reflexes were absent on both sides. The knee jerks and ankle jerks were present, but sluggish on both sides. The abdominal and epigastric reflexes were absent on both sides. The Babinski sign was present on the right. The blood count showed 32,000 white blood cells, with 94 per cent. of polymorphonuclears. The blood serum was negative. The spinal fluid was bloody but otherwise negative. The patient's condition became steadily worse, and on the third day he died of bronchopneumonia. Necropsy findings showed a subdural hemorrhage due to rupture of the basilar artery near the juncture of the vertebral artery.

The actual signs of rupture, on the other hand, may be preceded by those of pressure or irritation of extravasated blood at some distance from the site of the hemorrhage; in fact, our own experience leads us to believe that this is more often the case than that of direct pressure from a dilated vessel or aneurysmal sac, and is clearly illustrated in the following case:

Case 2.—A man, aged 50, unmarried, with no occupation, admitted to Gouverneur Hospital, Jan. 16, 1924, complained of fronto-occipital headache, pain in the back and legs and inability to open the left eye. He had always been in good health since his fifteenth year, at which age he had had smallpox. There was no history of venereal disease, and the family history was negative. The present illness began six days before admission, with the sudden onset of pain in the back and legs, occipital headache, and drooping of the upper left eyelid. He was uncertain about having had fever, but insisted that he had had no chill prior to the onset of the pain, the location of which was chiefly supra-orbital and over the occipital protuberance; nor had he been drunk the night before, as his comrades had reported.

The patient was emaciated, and was not acutely ill. Ocular examination showed that the right eye moved freely in all directions; in the left eye there was complete ptosis. The gaze was outward and downward. The globe was immobile. The pupils were irregular, and the left was larger than the right. The left pupil was immobile; the right responded to accommodation, but not to light. The other cranial nerves were normal. The triceps, biceps and radial reflexes were not recorded in this case. The knee jerks were present, equal and somewhat diminished. The ankle jerks were present, equal and somewhat diminished. The signs of Babinski, Oppenheim and Gordon were all negative. The abdominal and cremasteric reflexes were present and equal. General examination showed the ears to be negative; the teeth were poor; the tongue was coated; the throat was injected. The chest was emphysematous, and there was hyperresonance over the upper anterior right chest; there was slight dulness of the right apex posteriorly, with exaggerated breath sounds below the clavicle. Examination of the heart showed the apex beat at the fifth interspace just within the nipple line. The sounds lacked tone. There were no murmurs. The blood pressure was 145 systolic and 78 diastolic. The pulse rate was 78. The abdomen was scaphoid, and otherwise normal. The liver and spleen were not palpable. The day after admission, the leukocytes numbered 7,200, with 57 per cent. polymorphonuclears; 41 per cent. lymphocytes, and 2 per cent. eosinophils. The specific gravity of the urine was 1.030; there was a slight trace of albumin and a few hyaline and granular casts; there was no pus.

On admission the patient's temperature was 99 F.; it rose gradually to 101.2 on the fourth day, and then gradually sank to 99 until the day of death, when it reached the low level of 97 F.

January 19, the serologic examination showed a negative Wassermann reaction. Lumbar puncture yielded 15 c.c. of yellowish fluid under moderate pressure; cells, 50 per cubic millimeter; globulin, not increased; Wassermann reaction, negative.

The patient's condition remained the same until January 22, when he developed pain over the left frontoparietal region. On this day, lumbar puncture yielded 40 c.c. of yellowish fluid under greatly increased pressure. January 24, the patient became drowsy and stuporous, but could be easily aroused to cooperate. The neurologic examination remained unchanged except that all reflexes were decidedly less active. Nuchal rigidity and Kernig sign were absent. The stupor gradually increased, and, January 27, he died suddenly.

Postmortem examination showed that death was due to subpial hemorrhage, occasioned by rupture of an aneurysm of the left vertebral artery near its junction with the basilar artery. The left vertebral artery was large and the aneurysmal sac was about the size of a lead pencil, 5 cm. in length and 0.75 cm. in diameter.

The onset in this case, consisting of occipital pain and left ophthalmoplegia externa and interna, preceded the apoplexy by two weeks, although leakage from the sac must have occurred at the time of onset, if we are correct in our interpretation of the irritating action of extravasated blood on the meninges. This burrowed forward and collected in a mass involving the left third, fourth and sixth nerves at the point of exit of the third and fourth. The real apoplectiform seizure did not occur till the day before death, when the patient lapsed into a gradually increasing stupor, progressing to deep coma with subnormal temperature. The leakage, however, must in all probability have been sudden and must have consisted of a single spurt, because there was no disturbance of consciousness or violence of symptoms at this time, merely severe occipital and back pain accompanied by left ophthalmoplegia. Furthermore, there could have been no constant leakage, since the condition remained stationary for two weeks and repeated lumbar puncture yielded only clear yellowish fluid.

Case 3.—A carpenter, aged 23, unmarried, was found in a stuporous condition in the shop where he worked. He was taken immediately to Gouverneur Hospital. On admission, he could be roused sufficiently to answer questions and complained of severe occipital headache. He vomited several times during the first day. The physical examination at this time revealed the following: Pulse, 90. Blood pressure: systolic, 110; diastolic, 40. Neurologic examination: marked nuchal rigidity; bilateral Kernig sign; rigidity of the abdominal recti. The heart was enlarged, with a mitral systolic murmur and aortic insufficiency, but otherwise negative. Serologic examination showed the blood serum Wassermann reaction to be 4 +. About 40 c.c. of bloody spinal fluid was withdrawn and replaced by antimeningococcic serum. In view of a temperature reaction and more bloody spinal fluid, the patient was again given antimeningococcus serum. By this third day, although the temperature remained elevated, he had regained consciousness, but was lethargic, and developed weakness of the sixth and seventh cranial nerves and a slight blurring of both optic disks. From this time he made steady progress toward recovery; the nuchal rigidity, Kernig sign and cranial palsies improved, and by the fourteenth day the spinal fluid had become yellowish, yielding a positive reaction for occult blood. Later on, the patient was allowed out of bed, and permitted to walk about the ward, until the thirty-third day of his illness, when he was suddenly seized with severe occipital headache. At this time, he exhibited general tonic rigidity, with clonic contractions of the right thumb and index finger; marked bilateral Kernig sign, and nuchal rigidity. Later, as he became unconscious, a bilateral Babinski reflex appeared. The spinal fluid again became bloody; he vomited frequently, and death occurred one hour after the seizure had started.

The cause of death in this case was found to be from a subarachnoid hemorrhage, issuing from a ruptured basilar artery, at its juncture with the right postcerebral artery.

Although in this patient the apoplectic nature of the onset, the marked rigidity of the neck, the bilateral Kernig sign and the bloody spinal fluid under pressure all suggested the correct diagnosis of rupture of the base, in order not to overlook the possibility of a hemorrhagic meningo-encephalitis, the administration of antimeningococcic serum was tried. At first the results seemed to justify the procedure, because, although the left facial and left external rectus palsies developed shortly after admission, the clinical course showed steady improvement. The palsies improved, the nuchal rigidity and Kernig signs gradually disappeared, and the spinal fluid changed from bloody to yellowish tinged. In fact, more than a month elapsed during which he gave every evidence of steady improvement, before the true pathologic condition declared itself, and he succumbed to the fatal rupture of the aneurysm. Once again, the original clinical picture reasserts itself and we find that the bloody fluid, nuchal rigidity and bilateral Kernig sign became evident, but this time as he became completely unconscious, with the addition of pyramidal tract signs, and clonic contractions of the muscles of the right hand.

Case 4 illustrates a somewhat different type of the condition in that here the element of preceding trauma becomes a possible factor.

Case 4.—A man, aged 21, an editor, admitted to the Neurological Institute, Dec. 29, 1917, had had a fall on the ice four weeks previously. He was somewhat jarred but went immediately to business and apparently suffered no ill effects.

December 13, he went to fix the furnace in the cellar. As he opened the furnace door and stooped over, he felt a sudden sharp pain across the eyes, radiating over the top of his head. He felt dizzy and faint, walked a distance of about 6 feet, sat down on a step and became unconscious. The family physician found the patient in a semistuporous state from which he could be partially roused. He remained in this state until about noon the next day. He complained of severe headache and diplopia; there was no nausea or vomiting. It was noted then that his neck was stiff and he had a positive Kernig sign. A physician from Camp Upton withdrew 20 or 30 c.c. of bloody cerebrospinal fluid, laboratory examination of which proved negative in every respect.

He remained in the same condition, his headache becoming increasingly worse until December 26, when he had a general convulsion and remained unconscious for about an hour. When he regained consciousness, 80 c.c. of the same bloody colored fluid was withdrawn under considerable pressure. After this, he experienced great relief. He was admitted to the Neurological Institute, December 29, complaining of a severe headache, rigidity of the neck, inability to walk and general prostration.

The patient was well built and well nourished. There was no evidence of atrophies or emaciation. There was good color and no cyanosis. The pulse was slow, averaging between 48 and 68. Blood pressure ranged between 90 and 115. Neurologic examination showed the facial innervation equal; palpebral fissures equal; no ocular palsies; pupils equal, moderately dilated, responding somewhat sluggishly to light. The tongue protruded in the midline. The arms showed no weakness, nor was there any paralysis of the legs. The arm jerks were all present, slightly exaggerated. The knee jerks were very sluggish; the ankle jerks were not obtainable. There was no Babinski reflex. The epigastric, abdominal and cremasteric reflexes were active and equal on the two sides. There was no ataxia, no incoordination and no disturbance of smell. The fundi showed beginning choked disks on both sides.

On the evening of his admission, December 29, a lumbar puncture was done. After 30 c.c. of bloody fluid had been withdrawn, he complained of violent headache, faintness and dizziness. The withdrawal was discontinued and the examination of the fluid was negative as heretofore. The patient remained in about the same condition. He gradually developed a slight elevation of temperature, which fluctuated between 99 and 101 F. until January 3, when he complained of constant blurring in the vision of the right eye. On examination the same night, it was found that the left knee jerk was livelier than the right. There was no Babinski reflex. The ankle jerk could not be obtained. On the right, the abdominal reflexes were diminished; on the left side, they were present. There was no nystagmus. The right pupil was widely dilated and nonresponsive to light.

About midnight, the patient had a severe convulsion involving the left arm, left leg, and both sides of the face. During the convulsion, the weakness of the right lower facial muscles appeared. For about half an hour, he could be roused and talked intelligently. During the night, he lapsed into a semiconscious condition from which he could be roused, but did not appear able to talk. On the morning of January 4, during examination, it was seen that the right pupil was widely dilated and did not respond to light. The left pupil responded to light and in accommodation. The swelling of the right disk had increased 2 diopters. The right palpebral fissure was somewhat narrower than the left. The nasal field of the right eye was obliterated.

Examination showed the epigastric reflexes diminished, but the right stronger than the left. The right abdominal reflex was active, the left present. The left knee jerk was livelier than the right; the ankle jerks were not obtained. A doubtful Babinski reflex was present on the left side. Because of the sudden increase of pressure and convulsions, it was decided to perform a decompression.

On the evening of January 4, Dr. Elsberg performed a right subtemporal decompression. The dura, on exposure, was plum-colored, typical of a subdural hemorrhage, and on incision, a mass of old clotted blood oozed out. Exploration in all directions failed to reveal the source of the hemorrhage. Puncture of the ventricle gave no fluid. Pulsation of the brain returned to a slight degree. It was therefore decided to do a left decompression. When the dura was exposed, no blood was seen and the dura had a normal glossy, glistening appearance. When the dura was incised, considerable pressure was evident by the bulging of the brain substance into the wound. An aspiration of the left ventricle was undertaken. After the needle had penetrated 1½ inches (38 mm.) it came in contact with a hard surface which felt like a capsule, according to Dr. Elsberg's description. This was easily penetrated and about 10 c.c. of a bloody colored cerebrospinal fluid was withdrawn, similar in every way to that which had been withdrawn by lumbar puncture. The patient died that night from respiratory paralysis.

A necropsy was performed, January 5. A normal calvarium was found. When the dura was removed, the right hemisphere was seen to be covered with an old clot of blood. The left hemisphere was clear. The brain was removed without difficulty. There were no adhesions, and the basal surface showed blood covering the right hemisphere and beginning to burrow close up along the track of the left anterior cerebral artery. Just in front of the right temporal lobe, there was an aneurysm of the right middle cerebral artery about the size of a cherry, impinging on the right optic nerve anteriorly to the chiasm and apparently burrowing forward and upward into the substance of the brain. The brain substance adjacent and anterior to this mass was the seat of an infiltrating hemorrhage. It was thin, apparently connected with the ventricle, and there was a slight tear in the substance indicating that the ventricle was diseased.

Owing to the location of the aneurysm and the part of the wall that gave way, the pressure was exerted upward and forward to the inferior surface of the right frontal lobe. Pressure symptoms thus gradually developed, and in consequence there was beginning choked disk and obliteration of the nasal field of the right eye. From the onset, however, despite its apoplectiform character, there were the same signs of meningeal irritation accompanied by persistent bloody fluid.

COMMENT

In these cases, every one of which, one might say, has its counterpart in the literature, one finds group signs that should indicate quite positively the pathologic condition underlying the clinical picture. This group undergoes certain variations, chiefly of degree, in different cases, but its constituents are usually found in every case, and consist of disturbances of consciousness, cranial nerve palsies, nuchal rigidity, Kernig signs, intense occipital headache and blood-stained spinal fluid.

The disturbances of consciousness are usually consonant with the degree of vascular shock throughout the cerebrum caused by the first break in the vessel wall, and vary all the way from delirious episodes to deep coma. Thus, although Case 2 appears to have had its onset with ptosis and headache, the patient must have suffered a disturbance of consciousness the night before, which had been called drunkenness by his comrades. In all the remaining cases of our series, as well as in the greater part of those reported in the literature, there was some form of disturbance of consciousness which sooner or later took the form of an apoplectic seizure.

Fearnsides is inclined to consider that these disturbances either before or after rupture depend on the site of the vascular deficiencies and the course the hemorrhage takes. Our own experience leads us to believe that the shock to the entire cerebrovascular system at the time of rupture is a much greater factor than either the site or the course of the hemorrhage.

The cranial nerve palsies are most frequently seen affecting the ocular motor nerves, the facial, or else those constituting the muscles of articulate speech. Since we are concerned chiefly with the signs after the apoplectiform attack, it can hardly be a question of pressure from an aneurysmal sac, but rather the pressure effects of blood extravasated and collected in a kind of meningeal sac or else the effect of focal edema which invariably follows the irritation of any nervous membrane. Our own experience leads us to believe that the former is in most instances the causative factor, although the ordinary postmortem changes and the trauma incident on removing any brain render this insusceptible of any positive proof.

Nuchal rigidity, Kernig sign, and occipital headache, we believe, are to be classed as an expression of intense irritation of the meninges; whether this results from the action of extravasated hemolyzing red blood cells on the membranes, or whether a toxic split protein results from hemolysis and causes an irritation of the sympathetic supply of the meninges, we are not in a position to say. It would seem, however, that there must be some other factor present than merely hemolyzing blood in the spinal fluid, since the foregoing phenomena are not invariably found when a simple contamination of spinal fluid from faulty puncture occurs, nor do they occur in the milder cases of fractured base Both Fearnsides and Wichern feel that these are more apt to be late manifestations after the leakage is well under way. This, however, has not been our experience, since they have appeared early in the course of the disease in each instance. That they are sometimes dependent on the amount of leakage might be deduced from Case 3, in which all signs disappeared when apparent recovery took place, only to reappear with greater intensity when a fresh hemorrhage occurred.

We would call attention to the fact that nuchal rigidity has no value as a localizing sign, at least so far as the posterior fossa is concerned as the site of the rupture; rather, it represents the presence of extravasated blood in the posterior fossa, no matter where the break may occur.

The presence of persistent blood in the spinal fluid, hemolyzed red blood cells and variability of color from bright red to yellowish tinged, without clot or large amounts of albumin, should always arouse the suspicion of cerebral hemorrhage at the base It is, of course, possible that hemorrhage into the ventricles from eroded vessels of a tumor may confuse one in making a decision; but in the latter case the blood-tinged fluid appeared late in the course of the disease, whereas in the former it invariably appears early, persists throughout, and remains bright red as long as leakage occurs. If the flow of blood ceases or in some way becomes temporarily walled off, the color changes to yellow, or may eventually become entirely clear, only to become red again when the accession of fresh blood begins

17 West Seventieth Street—37 West Fifty-Fourth Street

ABSTRACT OF DISCUSSION

Dr Edwin G Zabriskie New York I should like to call attention to one rather interesting phenomenon that we purposely made no comment on because we had no explanation for it, and that is, the occurrence in two of these cases of complete lack of Achilles' reflexes There also was a surprisingly large number of similar reports in the cases that we found in the literature Whether this has any reference to pressure on the pons or pressure on the patella, I am unable to say

Dr. Charles Rosenheck, New York I enjoyed Dr Packard's paper very much I should like to know whether it is possible to venture a diagnosis before rupture has taken place I feel that diagnosis of basilar cerebral hemorrhage is not a matter of ease It can perhaps suggest itself when one has the signs of oculomotor palsies, plus an apoplectiform insult, with a bloody spinal fluid One can then venture a diagnosis of a rupture or a leak in a miliary aneurysm But to venture a diagnosis before one has absolute localizing signs must be a matter of extreme difficulty, and I doubt, as far as I am aware, whether such a diagnosis is ever possible I recall one case in which I made a diagnosis of a hemorrhagic encephalitis, because of the suddenness of the onset, a slight elevation of temperature and bloody spinal fluid; the patient developed marked rigidity of the neck and all the other signs of a meningitic syndrome He died and the necropsy revealed evidences of a rupture of an aneurysm at the base

Dr Maurice Packard, New York I have very little to add, except that it seems almost impossible to diagnose an unruptured basilar aneurysm Diagnosis can be made, however, when these aneurysms begin to leak The third case was the only one of our series that had a positive Wassermann, four plus Although only 23, the patient had a vascular syphilitic aortic insufficiency and several small aneurysms throughout his body, the subclavian and other arteries being involved Prior to his entry, he had an apoplectiform convulsion, for which he was rushed to the hospital A spinal puncture was done, and the spinal fluid was bloody It was not a contamination Another member of the staff saw him, and because of this bloody fluid, rigidity of the neck and other meningeal manifestations, a diagnosis of fulminating meningitis was made Antimeningococcus was given, although the spinal fluid was sterile The boy persisted in living and, in fact improved The spinal fluid changed from a deep red, to a marked yellow, then to a paler yellow, xanthochromia, and finally it assumed a normal color Because of the other aneurysms in his body, I ventured the diagnosis of a ruptured basilar artery He apparently got well and was discharged As he was walking across the floor, he suddenly gave a cry and fell to the floor in an apoplectiform convulsion I placed him in bed and performed a spinal tap The fluid was immediately bloody, and within an hour he was dead. I think that if one can rule out fractured skull—and in all of these cases one must have a roentgenogram of the skull—if one can rule out cerebral tumor, and if there is a persistent bloody spinal fluid, with nuchal rigidity and an occipital headache, the suspicion of a ruptured basilar blood vessel must be entertained

THE ACTION OF PITUITARY EXTRACT ON THE UTERUS

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In 1921, Dr. C C Haskell and I[1] wrote an article on the dangers of pituitary extract which caused quite a disturbance in French medical literature, culminating in a special double number of the *Revue française de gynécologie et d'obstétrique*,[2] devoted entirely to the consideration of the use of hypophysial extract in obstetrics The 105 pages of the issue are taken up chiefly with various men's ideas as to the modes of administration (subcutaneous or intravenous), the dosage, the indications and contraindications, and the explanation of the maternal and fatal catastrophes (It is admitted that some have occurred) Laurentie has two pages in which he reports a disaster He makes the point, a very good one, that uterine inertia may be associated with muscular degeneration If Couvelaire's reply to the editor's questionnaire[3] had been put in a conspicuous place, say as an introduction, instead of in fine print on page 282, the rest of the issue would not be so dangerous

There is not a word about the action of pituitary extract on the uterus Ludwig and Lenz's names appear in the bibliography of one article, but no evidence of their work appears in the text In fact, there seems to be the great misconception in all the articles that the extract, if given in small enough doses, promotes normal uterine contractions This is a very superficial clinical observation Any one who cares to know can easily demonstrate the falseness of this idea by measuring the strength of the uterine contractions and the intra-uterine pressure. This can be done by connecting a metreurynter with a mercury manometer, on the distal arm of which there is a float and a writing point. Hysterograms obtained in this way show that if pituitary extract acts at all, the action is a very characteristic one. It never gives contractions with periods of rest between, but always a continuous series of contractions with increase in intra-uterine pressure.

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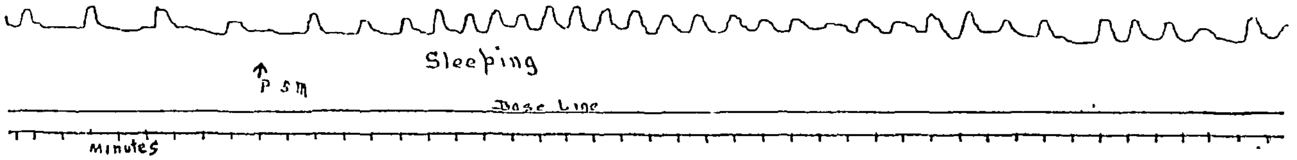
[1] Haskell C C and Rucker, M P Dangers of Pituitary Extract, J A M A **76:** 1390 (May 21) 1921

[2] **20:** 201 307 (April) 1925

[3] "You ask me my opinion It is very simple Never, in my private practice or in my service, have I had recourse to these extracts for the purpose of acting on the uterine contractility You see I am *not on the front page*" (Vos me demandez mon opinion Elle est tres simple Ni dans ma pratique privee ni dans mon service je n'ai jamais eu recours a ces extraits dans le but d'agir sur la contractilite uterine Vous voyez que *je ne suis pas a la page*")

This action is beautifully illustrated in a recent case of inevitable abortion in which labor was induced in the fourth month with a number 3 Voorhees bag.

The patient was given one-fourth grain (0.0162 gm.) of morphin and 1/150 grain of atropin at 1:30 p. m. At 8 p. m., she was having painless contractions of the uterus that averaged 10 mm. of mercury at intervals of two minutes. She was given 5 minims (0.3 c.c.) of pituitary extract subcutaneously. Five minutes later, there was a characteristic pituitary extract action. The contractions increased in height only very slightly but were continuous one after another, without any period of rest. Twenty-two minutes elapsed before there was the slightest pause between contractions. The intra-uterine pressure was increased 6 mm. of mercury. The patient still felt no pain.



Record of the action of pituitary extract on the uterus.

In other words, here was a dose so small (considering the stage of pregnancy) that it caused no action clinically, and yet it produced an incomplete tetanus of the uterus. The accompanying tracing shows this graphically. If the action of pituitary extract were more generally understood, there would be no need of so much discussion as to its place in the practice of obstetrics.

ACHLORHYDRIA PRECEDING PERNICIOUS ANEMIA

REPORT OF A CASE OF MORE THAN FOURTEEN YEARS' DURATION [*]

MILLS STURTEVANT, M.D.
NEW YORK

Absence of hydrochloric acid in the stomach contents is regarded as an essential point in the diagnosis of pernicious anemia.[1] Absence of hydrochloric acid is a noteworthy feature in other conditions producing similar anemia, as cancer of the stomach and sprue.

The possibility of achlorhydria as a causal factor in pernicious anemia has been considered.[2] In support of this are cited cases of gastrectomy followed by pernicious anemia; e. g., Hartman's case,[3] and Moynihan's[4] case and five cases mentioned by Hurst.[5] In further support of a causal relationship between achlorhydria and pernicious anemia, or as a matter of medical interest, cases have been reported in which the achlorhydria preceded the anemia by years. Hurst has reported one case of twelve years, Faber[6] one of ten years.

The following case is of over fourteen years' duration, from the time of known achlorhydria to the onset of the symptoms of pernicious anemia. It is reported because it is of longer duration than that of any case that I have been able to find recorded.

REPORT OF CASE

A man, aged 47, a native of the United States, in 1902 first consulted Dr. G. R. Lockwood about a pain coming beneath the sternum three or four hours after eating and during the night. He had had this for three years and had consulted a specialist in Germany two years before and another in New York a year previous. Both of these physicians had told him that he had no acid in the gastric juice, and had given him acid, which relieved him. The patient, however, tired of taking the acid, sought further advice in hope of a cure. The hemoglobin was 81 at this time. No further blood examination was made. An Ewald meal taken on two different days had the appearance of achylia and was negative for free hydrochloric acid.

He improved under treatment but would occasionally have a return of his pain. In 1904, he developed diarrhea, apparently also due to achylia. This lasted about two months, came back again six months later, and then disappeared for all time.

From 1905 to 1913, he had little trouble. The bowel movements were occasionally loose. He had attacks of substernal pain from time to time, but for the most part he was well. During 1913, he had much irregular substernal pain and belching of gas.

During the first ten months of 1915, he complained of sore mouth. In November, he had an abscess in the right lower jaw, which was opened and drained. With this there was some apththous stomatitis. He ascribed the sore mouth to extensive bridgework he had had for years, so following the abscess he had two bridges repaired. In December, the tongue was better, but he began to feel short of breath. The following month he was weaker and more dyspneic. He then contracted an acute infection of the upper air passages, with fever for five days. He was weaker and more short of breath after this.

In February, 1916, he was so weak as to have to sit down while shaving. He complained of great precordial distress. His blood at this time showed hemoglobin, 55 per cent.; red blood cells, 1,370,000. Ten days later the test showed hemoglobin, 48 per cent.; red blood cells, 1,830,000. There was great variation in the size and shape of the red cells. No nucleated red cells were seen. Transfusion was done three weeks later. In late March, 1916, splenectomy was performed. Transfusion was done again in July, and from time to time until he died in July, 1918.

The blood picture was characteristic of pernicious anemia at times. He had sore mouth with weakness and dyspnea. He developed spinal cord symptoms after splenectomy and during repeated transfusions.

SUMMARY

This patient's symptoms of achylia began in 1899. In 1900, he was told he had achlorhydria. The sore mouth began in 1915. It was discovered that he had pernicious anemia early in 1916. It seems conclusive that the achylia had lasted over fourteen years when the anemia developed.

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[*] From the Department of Medicine, University and Bellevue Hospital Medical College.

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955 Park Avenue.

Special Article

SOCIAL MOVEMENTS FOR THE PROLONGATION OF LIFE

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Life prolonging preachments and methods always have been an outstanding part of the practices of all classes of healers of all ages. The evolution in methods employed forms an interesting and illuminating chapter of human history. Like all inherent human traits fostered by the natural wishes of individuals for longer, healthier and happier lives, movements and methods for extending life have moved in cycles—sometimes occupying the center of the stage and at other times temporarily replaced by something else.

The interchange in popularity between *life prolonging* and *disease preventing* practices and methods of *curing disease* would make an interesting graph. At times the three lines would be blended and at others far apart.

All honest, intelligent efforts along either of these lines are, of course, highly commendable, and when they are carried forward hand in hand, we have modern scientific medicine at its best. One rather more than usually active effort to extend life was initiated some fifty years ago as a business proposition, by which life insurance carriers could save more money and be more certain of their actuarial figures by periodically examining their policyholders. Many physicians interested in life insurance have frequently urged the importance of more or less extensive medical services for insured persons—paid for by the insurance carriers—as a movement that would be financially profitable to the companies and also generally advantageous as a health measure. Certain insurance carriers have been rendering various forms of medical, nursing and other health services to their policyholders for a long time. At present, many of the companies are in the field of medical and health service of one sort or another for their policyholders, and these practices are expanding rapidly, both in volume and in variety. Life prolonging movements are active and varied in industrial, fraternal, religious and miscellaneous groups of many kinds.

The American Medical Association and other medical organizations have long since indorsed the idea of health services, including periodic examinations and other methods calculated to prevent illness and thus prolong life. In fact, this is the keystone on which the art and science of medicine rests, and it is the sort of medicine that most physicians always have practiced and still practice.

The desire of all persons to live as long as possible forms such a strong appeal and offers such attractive opportunities for both the commercialist and the altruist that there is, as was to be expected, a wide variety of efforts to set this form of medical practice aside as something special and promote or exploit it into a great health movement on the one hand and a great commercial enterprise on the other. The attractiveness of this thought explains the growing number of organizations now practicing medicine as corporations, either by mail or through paid agents. Some of them claim to keep people well and provide them with long life by periodic examinations and advice based on diagnoses arrived at by the study of specimens of urine and of a questionnaire filled out by the patient, both supplied to some distant "office" by mail. From such ridiculously inadequate information, the corporation's "experts" make diagnoses, called by some other name, and prescribe treatment also disguised as advice or what-not, by mail. There are several other varieties of this practice of medicine by mail based on one sort or another of "periodic examination." Some of the more recent schemes of corporation practice rely on paid medical agents for part of the information which the central council of experts uses to make the patients' diagnoses and to prescribe at least certain types of the non-pill portion of treatment. One of the largest and best financed of the corporations, promoted by business methods and practicing at least all that phase of medicine and health that can be included under an amazingly generous definition of periodic health examinations and membership health service, is interesting in its purposes, methods and results.

I have devoted considerable time during the last three years to a study of the activities of this and several other less prominent corporations proceeding along more or less similar lines. The question has been approached through extensive correspondence and personal conferences with representatives and examiners, both medical and nonmedical. Patients and beneficiaries have been interviewed both directly and through their personal physicians, and the scientific and public literature, including the extensive advertising matter, has been closely followed. The story is too long to tell here in detail, but a few of my conclusions and the chief reasons for them may be of interest to other students of the tendencies in medical and health practices.

PURPOSES

Whether these corporations are practicing medicine for commercial gain or as altruists, or whether both altruistic service and financial profit are motivating forces, is not as important as it has been made to appear. That they are organized for business by business methods is obvious, and whether they make a profit or not depends on the soundness of their policies considered from a business point of view and on the business astuteness of their executives. Suppose they *are out for profit; there is inherently nothing more* wrong with such a policy honestly, intelligently and economically carried forward than with the many other corporations and individuals engaged in other phases of health work for profit. The openly avowed purpose of them to occupy the position of "intermediary between the doctor and his patient"—a sort of middleman in medicine—is a stupid procedure from a business standpoint and an unwise, if not reprehensible, one from the standpoint of the welfare of the sick. Forward-seeing economists have long been calling attention to the useless varieties of middlemen as a potent factor in the rising costs of commodities. A similar method in health work will produce precisely the same result, an increase in the costs of service. The inevitable result of wide adoption of the policy of middlemen in medicine would be the conversion of the family physician, directly interested in and responsible to his patient, into a sort of agent or employee of some corporation through which at least certain types of his work and opinions would have to go. From the patient's standpoint, it would substitute, in part at least, corporation or big business medicine for the personal, sympathetic, confidential relations now existing between the patient and the physician of his selection—and at an increased cost.

POLICIES

Some of the life prolonging corporations, partnerships, lodge, church and similar groups theoretically limit their patients to industrial medicine and membership patients, both the sick and the supposedly well. Others, in effect, invite every one who will pay his fees to become their patient. Arrangements are provided whereby the corporation substitutes for the family physician in some of his responsibilities to his individual patient. In other instances, patients are grouped by employment, fraternal, organizational or other arrangements, and served as a whole. Holders of life insurance in many companies are paying indirectly in premiums for corporation health service calculated as a financial asset by the carriers, but sugar-coated with the statement that it is also good for the health of the policyholder. Both claims may be true, but one should follow the logic a little farther d form his own conclusions.

E LIFE PROLONGING CORPORATIONS AND SIMILAR BODIES PRACTICING MEDICINE?

Life prolonging corporations and similar bodies laim that they are not practicing medicine. Their denials are ingenious, humorous and some of them belligerent.

Legally, what constitutes the practice of medicine varies widely as between states. I shall mention here only two states:

In New York, a person practices medicine "who holds himself out as being able to diagnose, treat, operate, or prescribe for any human disease, pain, injury, deformity or physical condition and who shall either offer or undertake by any means or method to diagnose, treat, operate or prescribe for any human disease, pain, injury, deformity or physical condition."

In California, any person is practicing medicine "who shall practice or attempt to practice, or who advertises or holds himself out as practicing, any system or mode of treating the sick or afflicted in this state, or who shall diagnose, treat, operate for, or prescribe for, any disease, injury, deformity, or other mental or physical condition of any person."

In some states the law is even clearer and more inclusive than it is in these quoted statutes; in others it is less so. The definitions adhered to by physicians, their organizations and educational institutions are still more definite and include under the practice of medicine all phases of health work that should require an adequate medical education to practice. Certainly, clinical laboratory work and roentgen-ray laboratory work are included as phases of medical practice; this ruling is supported by court decisions. Within the reasonable interpretation of law or ethics, every one of these corporations and other business organizations operating in the health field is practicing medicine. No person can make a "periodic health examination" without practicing medicine. Advice to the patient as to what to do is the practice of medicine, and making a "diagnosis," by whatever ingenious name it is called, is the practice of the most difficult part of medicine. These statements are equally true whether the diagnosis is called "survey," "inspection," "interpretation," "preclinical opinion," or any of the score or more makeshift names used as a blind to credulous physicians and as an escape from the possible consequences of the law. These statements are also true regardless of the method, kind and quality of evidence on which the diagnosis is based. The concern that examines a stale specimen of urine after it has been churned up for days in the parcel post and points out by mail to the credulous patient this and that for which he should eat this or that, or urges him to consult so and so for further advice is, of course, practicing medicine. So also is the concern practicing medicine that engages a physician to fill out certain blank forms, make certain examinations and send his reports to a certain office by mail where the data are examined by "experts." Whenever these "experts" give an "evaluation," "opinion," "summary," or a diagnosis under any of its numerous camouflages, the concern they speak for is practicing medicine. Not only are all of these concerns practicing medicine but they are practicing illegally, at least in some states. The attorney for the California board of medical examiners has ruled that corporations cannot legally practice medicine in that state, but some of them are so practicing. Procedures are now under way to see whether the courts will sustain this opinion, and if they do it will have far-reaching consequences.

WHO DOES THE MEDICAL WORK FOR THESE VARIOUS CORPORATIONS AND HOW IS IT DONE?

Some of these corporations collect all their evidence by mail. Some sort of an alleged council or board of "specialists" in a central office in a distant city examines the evidence, makes the diagnosis, using some other term for safety, and reports directly to the patient. Some require as part of the evidence a specimen of urine, which, after being tossed about in the mail for days, is said to be examined and the findings are included as part of the evidence that the "experts" use in arriving at a diagnosis, in making the prognosis and in advising treatment. Other corporations require that their blank forms be made out by some "doctor" who will accept their often inadequate fee for the service, and after the doctor has completed his clerical duties, his report goes to the central office and is interpreted by the companies' much advertised specialists. At least one corporation goes still farther—the patient must have his blank forms made out by the particular doctor that the corporation tells him to see. However, even these doctors appear not to enjoy the confidence of the corporation employing them, for they must send their "reports" to the central office specialists to be used by them in making up their "diagnosis," which is then "transmitted directly to the patient." Some of these self-styled middlemen in medicine demand more evidence in some sections than they do in others. They require the use of roentgen-ray and other laboratory evidence in many patients who are near enough the "home office" to patronize the corporation's own plant (for an extra fee). However, these middlemen experts seem to "get by" without roentgen-ray and other costly laboratory reports for those of their patients who are too far away to use the company's home plant or who will not stand for the extra fee for such evidence.

Surely further comment on the point is unnecessary, even for the enlightenment of laymen. Some corporations not only list their long distance preclinical diagnosticians but advertise them widely, apparently as one of their strong practice-getting assets. Others, particularly the "stale urine" groups, do not list their experts.

WHO ARE THESE EXPERTS?

Who are these experts who are wise enough to sit in a distant office and pass on the condition and requirements of patients? Some of them are well known among physicians as excellent bedside doctors. Some of them have extensive newspaper reputations out of all proportion to their standing among their colleagues. Some of them are not doctors at all. One thing that their names have in common is advertising value. But there is nothing new in capitalizing this particular kind of value to promote the sale of commodities. That is precisely why beauty specialists pay thousands of dollars for the names of wives of prominent prelates, soldiers, statesmen and others.

WHAT ARE THE FEES?

Their fees are all strikingly similar; from 50 cents to $2 a month, whether the corporation or other business scheme for the practice of medicine on a large scale is fraternal, industrial, religious or just plain big business. In most instances, the fees are in the nature of membership dues in an amazingly wide variety of organizations. Even magazines have entered the field with all sorts of health clubs which any one—particularly children—can join for a few cents. Several department stores in California—and presumably elsewhere—now extensively advertise health departments in which one can buy "positive health" by the bushel. In some instances, the fees, as in taxes, are not made obvious. An extensive and rapidly expanding method is to include them in premiums on insurance policies. Some insurance companies spend their money to support their own medical and health services for their own risks. Others "farm out" this service to other corporations to render for them, and both parties spend great sums of money anticipating the fear of the policyholder that there is some sort of an understanding between the corporation that carries the financial risk and the one they have hired to see to it that the risk is a safe one. It might be well for these "policymakers" to study the life of Barnum and read again the story of the ostrich, as well as that particular homily of Shakespeare which tells of the fellow who protested too much.

WHAT WILL BE THE EFFECT?

What effect will corporation practice of medicine and health have on current methods? As it is now being promoted, the movement is calculated to destroy retail or personal practice of health. If corporations can practice medicine by mail, with or without utilizing a few local doctors to fill out their blank forms and make recommendations to a body of much advertised specialists of many varieties in some distant office, it is obvious that they can prolong life more cheaply than it can be done by the one educated physician to each 700 of our population, serving his patients in a personal way. Every medical economist realizes that some method of distributing the costs of health upkeep must be found and will welcome the hoped-for day when it arrives. History is replete with the wrecks of such attempts, and there are almost as many of them today as there are sure cure "patent medicines." They are for the most part amateurish, incomplete, political, mercenary or stupid in their conception and methods.

As an intelligent people, we ought to be able to establish as complete and satisfactory a system of voluntary insurance for health as we have for life, automobile, fire and accident. To do so, however, certain eon-old characteristics of human nature, heretofore largely disregarded, must be embodied in the scheme. But that is another story, and the answer will not be found by governments and political units expanding their programs or by adding "middlemen" or other groups further to complicate the greatest economic problem of all time.

Investigations now under way show that there are in California alone more than 500 agencies—exclusive of educated licensed doctors—which are promoting health for pay. There are probably as many elsewhere. To be sure, the fees are not always easy to find, but they are there nevertheless and, as with taxes, the consumer pays. In its ultimate analysis and regardless of its possible effect on special persons or corporations, any projected health movement must rise or fall on the effectiveness and cost of its service to the people. It must not be forgotten that 100 per cent. of the people are not only intensely and vitally interested but are growing constantly more intelligent in health matters. None of the hundreds of schemes to capitalize some one or a small group of health failings or fads and to make a profit out of human frailties by skilful advertising and propaganda are equal in effect to the centuries-old custom by which a personally selected personal health physician serves his clients in all health matters, on the basis of personal agreement. The time will come when progress will be made by some intelligent plan of voluntarily distributing the constantly increasing expenses of such services without interfering with, competing with or dictating to those who serve or those who are served. Such progress has not and will not come through substituting for the personal, confidential, sympathetic, intelligent help of what President Vincent calls the "personal health counselor" or doctor any of the much advertised and propagandized shortcuts to a longer life.

Experience seems to demonstrate not only that sufficiently skilful advertising will create a market for anything but that by it whole nations can be educated to accept only certain flavors of anything from chewing gum to climate. This—advertising—is the chief advantage that all varieties of those who promise longer life for a fee have over the personal health physician. By the extensive use of their weapon, these corporations, wholesale houses, department stores and what-not may make even greater "business" successes than they have in the past, but it will take a more intelligent conception of the problem of health than any of them, from the examiner of "stale urine" to the modern "middlemen" group, has devised materially to affect established health practices.

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SATURDAY, NOVEMBER 21, 1925

PERIODIC PHYSICAL EXAMINATION

"The American Medical Association and other medical organizations," says Dr. William Everett Musgrave in his special article on "Social Movements for the Prolongation of Life" in this issue of The Journal, "have long since indorsed the idea of health services including periodic examinations and other methods calculated to prevent illness and thus prolong life." This week the secretaries of all the state medical societies and the Board of Trustees are holding a conference for the study and promotion of periodic physical examinations through the county and state medical societies. It is unnecessary to debate the question as to who first proposed this idea for the prolongation of life. Certainly, the proposal antedates any of the special movements now active in offering to the public plans and personnel for its operation. However, it is well to recognize at the same time that, no matter what organization or what method shall finally assume leadership in this field, *success is absolutely dependent on the cooperation of the large body of individual physicians in this country.*

As Dr. Musgrave indicates, and as Dr. M. L. Harris, chairman of the Judicial Council of the American Medical Association, has recently emphasized,[1] the proponents of periodic physical examination fall into two groups: the organized medical group and the commercial institution group. Of the latter some are incorporated for profit and some ostensibly not. Among the medical organizations now promoting the idea of periodic examination may be mentioned the American Medical Association, the National Health Council and the Gorgas Memorial. The National Health Council has apparently confined its efforts largely to promotion of the idea among the public. The Gorgas Memorial, planned originally to endow an institute for research in tropical medicine, has announced that it plans to popularize periodic physical examination, using a considerable portion of the funds which it proposes to assemble largely from the medical profession. The American Medical Association confronts the task of establishing this method of life prolongation on a national scale. Attempts will, of course, be made to reach the public with a nation-wide campaign of information and publicity, in order that persons may request such examinations from their individual physicians. The committee appointed by the Board of Trustees has prepared a suitable manual, and already many state medical societies are arranging to provide each of their members with a copy. The current conference is another step in the organization and promotion of the national campaign.

The commercial organizations in this field vary in size and scope from one with some 8,000 or more affiliated medical examiners to the one-room commercial laboratories devoted almost wholly to periodic examinations of urine only. But even the larger corporations, as Dr. Musgrave points out, lay great stress on the "stale urine" study. The fact that some of these organizations are spending thousands of dollars in advertising appropriations and are limiting their examinations entirely to urinary specimens should not be overlooked. Of these commercial institutions, Dr. Harris said:

> The next matter to which attention is directed is the increasing number of commercial organizations, stock companies created ostensibly for the purpose of making periodic health examinations or special examinations and tests, but all of them practicing medicine to some extent in one form or another. The claim is made by some of having an altruistic basis, but the payment of dividends on stock outstanding belies these claims. By appealing to the altruism of the profession with the usual sophistry, many medical men have been induced to lend their aid to these institutions not realizing that the money which went to pay the dividends to the stockholders came out of their own pockets. Commercial organizations furnishing periodic health examinations cannot exist without the aid of the medical profession and it is a curious bit of psychology that blinds the medical man to the fact that a corporation is getting the money for the work which he does. The physician makes a thorough physical examination of an individual sent to him by the corporation, makes out a complete report and sends it to the home office. The corporation pays the physician a small nominal fee for doing the work and then charges the individual examined a much larger sum for transmitting to him the results of the examination. It would seem that nothing but a childlike lack of ordinary business judgment would permit one to sell thus for a mess of pottage valuable services which another turns into gold.

Dr. Musgrave likewise calls attention to the stupidity, even from a business standpoint, of organizations acting as middlemen between the physician and the patient. He asserts, and he presents good evidence to support his assertion, that such corporations are clearly indulging in the practice of medicine and that they are using the medical profession for this purpose. To him, and to many other farsighted leaders, the entrance of business methods into the intimate relationship that has existed since time immemorial between physician and patient is a menace to medical practice. Dr. Musgrave concludes that it is the unwarranted use of advertising on an extensive scale that has given "these corporations, wholesale houses, department stores and what-not" the business successes they have had.

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[1] Harris, M. L.: Some Problems of the Medical Profession, Wisconsin M. J. 24: 340 (Nov.) 1925.

Practically all the organizations and institutions that have entered into the field of periodic physical examination for the prolongation of life argue that they have the support of the medical profession of the country. They present in support of their contention the names of their officers and of the members of their advisory councils, in most instances, men who have been recognized as altruistic leaders of the medical profession. One corporation presents the statistical statement that it employs more than 8,000 examiners, of whom 44.4 per cent. are members of the American Medical Association. Be that as it may, the entire medical profession of the United States is represented by but one organization, the American Medical Association. The House of Delegates of the Association has urged the establishment of ways and means for the promotion of such examinations on a large scale and for educating the public as to their value. Certainly, farsighted physicians will realize that the Association is concerned with protecting them and their patients from assaults on the intimate professional relationship which they have established, from the attempt to introduce a commercial feature into that service, and from any efforts to create a middleman's profit out of the service. All the corporations established to dispense medical service on a wholesale scale to the public that they attract by advertising methods allege that such profits as may accumulate are properly disbursed to charitable and educational organizations. At least two corporations have expended in this manner an amount exceeding $100,000. One of these corporations has paid dividends on stock to its supporters!

After all, the public is most concerned with securing a method for establishing universal periodic physical examination that will yield the most efficient results for the prolongation of life at the least possible cost. Experience has shown that the patient is best served by a competent physician who is intimately acquainted with his problem, who has served his family for many years and who will be able to conduct such an examination according to a systematic plan. On the basis of this examination, the physician will then be able personally to transmit to the patient the results of his study, and to advise him directly of the preventive methods to employ and of any curative measures that may be required for the control of abnormal conditions that may be discovered. Thus in contrast to the system whereby reports are made to a central office which as a middleman deals with the patient! Payment will be made directly to the physician who renders the service. Contrast with this also payment to the headquarters office from which the physician receives a none too equable dole. Moreover, consider the impression made on the patient that he is being served, not by a member of an independent profession, but by the employee of a too-efficient corporation.

It is time that the medical profession opposed vigorously the commercialization of medical practice. The greatest opposition can be achieved by the complete assumption of the task of periodic physical examination by individual physicians as an organized medical profession.

THE ALLEGED EXCRETION OF MORPHIN INTO THE STOMACH

The physiologic behavior of morphin in the body represents a subject of manifold interest. Information regarding the rôle of substances that come to the notice of the physician as frequently and emphatically as do the opium alkaloids is welcomed. Morphin enters into many human lives by the insidious pathway of the habit-forming drug, calling for all the intelligence and scientific strategy that can be marshaled to combat it. Acute intoxication with morphin is by no means infrequent. There has long been considerable debate as to the extent that morphin may actually be destroyed in the body; likewise as to the ease with which it may be eliminated unchanged. After several investigators had reported the excretion of subcutaneously injected morphin into the stomach, Alt in 1889 asserted that a significant part, as much as one half of the alkaloid thus introduced parenterally, could be recovered from the gastric contents.

This surprising statement has not remained unchallenged. Stress has gradually been placed on the secretion of morphin by the stomach, with the result that repeated gastric lavage has been recommended in cases of acute poisoning as a means of removing the noxious drug. The conservative statement has been made in the Pharmacology of Useful Drugs[1] that it is of the first importance that morphin is excreted into the stomach after it has entered the circulation, but it is probable that this excretion is not active after the first hour following the absorption of the drug into the circulation. It is sometimes stated that the excretion into this organ goes on for many hours, but it is probable that in such cases absorption has been prolonged.

A reinvestigation of the subject has recently been completed in Hatcher's laboratory at the Cornell University Medical College.[2] This was demanded because a critical study of the literature shows that careful investigators have failed to substantiate the older contentions of Alt. The study indicates that at most traces of morphin are excreted into the stomach of the cat and dog after subcutaneous, intramuscular or intravenous injections of varying amounts. It is evident that removal of such small quantities after intoxication could not produce any prompt improvement through the medium of eliminating the drug from the body. Hence, as Hatcher and Davis conclude, if gastric lavage is of value in the treatment of morphin poisoning in the laboratory animals, the outcome does not depend on the removal of morphin from the stomach. This conclusion should be taken into consideration in the future management of cases of human poisoning.

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[1] Hatcher, R. A., and Wilbert, M. I.: The Pharmacology of Useful Drugs, Chicago, American Medical Association, 1915, p. 60.

[2] Hatcher, R. A., and Davis, D.: The Excretion of Morphin into the Stomach, J. Pharmacol. & Exper. Therap. **26**: 49 (Aug.) 1925.

PERNICIOUS ANEMIA

The chief manifestation of pernicious anemia is, of course, the increased destruction of red blood corpuscles; but there are also changes in other parts of the body, notably in the nervous system and the alimentary tract. The natural assumption is that the blood changes, the gastro-intestinal symptoms and the nervous lesions are dependent on one another in some way. Their frequent association in pernicious anemia rather than in other forms of anemia has seemed to many clinicians to favor the view that they are the result of a common cause that makes the pernicious malady a well defined entity.

Through the veil of obscurity that has so long enshrouded the origin of pernicious anemia, investigators have attempted in particular to discover an etiologic intoxication or infection as the most probable pathogenic agency. True, some students of the subject have preferred to point to the red corpuscle as the foremost factor of disorder. They look on the erythrocytes as having become defective in some way so that they disintegrate in the blood with abnormal ease. Most investigators, however, agree with Warthin[1] of Ann Arbor in the belief that the hemolysis of pernicious anemia does not differ in kind from that occurring normally or in certain disease conditions, the difference being one of degree only. Such a point of view shifts consideration to a hypothetic hemolytic toxic substance repeatedly introduced into the body or originating in it.

Long ago the late Christian A. Herter,[2] reviewing his numerous observations on the bacteriology of the intestinal tract in advanced anemias, offered somewhat incriminating evidence against *Bacillus aerogenes-capsulatus,* now known as *B. welchii.* It was recognized that the intestine of normal persons, both children and adults, frequently holds small numbers of this micro-organism. Herter noted that in some conditions of disease the intestinal tract shows the presence in greatly increased numbers of anaerobic, gas-making bacilli, identical with *B. welchii,* and forming spores with difficulty. The change may be temporary, or the condition may be permanent and may constitute a definite infection of the gastro-enteric tract. Such a condition Herter believed to exist in pernicious anemia, and he sought indications of chemical products of bacterial origin that might account for the symptoms. Any one familiar with the difficulties of such biochemical research will appreciate why progress has been slow. Herter noted in certain cases of advanced anemia that, as the blood picture and the general conditions improve, there is a distinct reduction in the numbers of *B. welchii* in the feces, together with a better representation of the *B. coli* group. Hence he wrote, in 1906: "The close association between certain anemias and capsulatus infection of the gastro-enteric tract creates a presumption that this infection stands in a causative relation to these anemias, although experimental evidence of such a relation has not yet been obtained."

In the light of this prophecy of twenty years ago, unusual interest attaches to the newly secured evidence of Kahn and Torrey[3] at the Cornell University Medical College, New York. After it had been noted anew[4] that the fecal flora of cases of pernicious anemia—no less than thirty-three were examined—showed the constant presence of unusually large numbers of *B. welchii,* efforts were successfully directed to secure a toxin from cultures of this organism. Injections of the highly poisonous product into monkeys have produced changes in the blood strongly suggestive of pernicious anemia. These include a marked drop in the erythrocyte count and in the hemoglobin percentage, a rise in the index above 1.0, development of a marked condition of anisocytosis with many macrocytes, and a moderate degree of poikilocytosis. These changes were noted shortly after the first injection, and as treatments were continued, became more apparent. At the stage of greatest anemia, these animals showed some desquamation of the tongue epithelium, symptoms of nervous disturbance, and irritability followed by periods of lethargy. In all the monkeys, after about twenty days of treatment, an immunity to the toxin began to appear and could not be broken down even with a much increased dosage. For a time, however, the blood picture remained completely typical for pernicious anemia, exhibiting every feature that is considered characteristic for that disease. Cornell[5] has lately obtained similar results in rabbits by instituting a chronic infection with *B. welchii.* It would be rash to become unduly optimistic in regard to a topic that has already furnished so many disillusionments. Nevertheless, in view of the phenomena already cited, one cannot escape the propriety of Kahn and Torrey's belief that *B. welchii*—a micro-organism characteristically abundant in the stools of the affected and yielding a toxin that produces, experimentally, comparable symptoms of severe anemia—is deserving of further serious consideration as a possible etiologic agent of primary importance in pernicious anemia. Coupled with this is the suggestion that a test of the possible therapeutic value of *B. welchii* antitoxin in pernicious anemia is justified.

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[1] Warthin, A. S.: Am. J. M. Sc. **124**: 674, 1902.

[2] Herter, C. A.: On Bacterial Processes in the Intestinal Tract in Some Cases of Advanced Anemia, with Especial Reference to Infection with B. Aerogenes-Capsulatus (B. Welchii), J. Biol. Chem. **2**: 1, 1906.

[3] Kahn, M. C., and Torrey, J. C.: A Pernicious Anemia-Like Blood Condition Produced in Monkeys with B. Welchii Toxin, Proc. Soc. Exper. Biol. & Med. **23**: 8 (Oct.) 1925.

[4] Moench, L. M.; Kahn, M. C., and Torrey, J. C.: J. Infect. Dis. **37**: 161 (Aug.) 1925. Simond: Monograph 5, Rockefeller Inst., 1915.

[5] Cornell, B. S.: J. Infect. Dis. **36**: 425 (May) 1925.

Current Comment

MEDICAL HISTORICAL PERSPECTIVE

Recently, thirty junior and senior students in a Class A medical school were asked to indicate the names of five persons who, in their opinion, might be considered as having made the greatest contributions to medical science, stating the reason in each instance. Of the replies received, twenty-five listed Pasteur, sixteen Hippocrates, sixteen William Harvey, fourteen William Osler, nine Joseph Lister, eight Robert Koch, seven Galen, and six Laënnec. The remaining votes were scattered, including one and two each, for Paré, Banting, Ehrlich, Wassermann, Freud, Celsus, Billings, Morton, Long, Rush, Virchow, Ross and Vesalius, as well as many others less well known. How many had a clear conception of what constitute contributions to the progress of medical science? The mark of the cultured man in any field is a knowledge of its background and its growth, and of its relation to the rest of the cosmic scheme that we call civilization.

THE "LITTLE THINGS" IN NUTRITION

It has become common in these days to refer to the importance of the "little things" in nutrition.[1] The tendency has received such popular impetus that THE JOURNAL[2] was recently impelled to comment on the inadvisability of forgetting some of the other factors that should loom large, and to warn against the danger of indifference to the long established truths of physiology. There was a time when students of medicine were impressed with the greatness of certain physiologic accomplishments. The daily work of the heart was expressed in terms of man-power. Thus, supposing the heart to beat 72 times a minute, the day's work of the left ventricle would approximate 60,000 kilogrammeters. Calculating the work of the right ventricle at one fourth of that of the left, the work of the whole heart would amount to 75,000 kilogrammeters, which is just about the amount of work done in the ascent of the highest peak of the Catskills by a tolerably heavy man. In comparison with such large physiologic performances, how small are the "little things" that function in important ways. Japanese investigators[3] who have recently made attempts to identify vitamin A have isolated substances that were fed successfully in dilutions of one or two parts per million. And Levene and van der Hoeven[4] of the Rockefeller Institute for Medical Research have secured products containing vitamin B in such concentration that presumably less than 15 parts per million of the energy-yielding foodstuffs suffice to satisfy the need of this food factor. In comparison with such potent dilutions, the ordinary contaminants of our food seem enormous. Small wonder that the "little things" have become respected.

SIDE-LIGHTS ON INTRAVENOUS MEDICATION

In the majority of cases the purpose of the administration of drugs, whatever the mode of entrance into the organism, is to have them reach the circulation and thus become distributed to the organs and tissues. Absorption may be regarded as a circuitous process leading to this end. However, it is measurably slow, so that the drug is distributed gradually rather than suddenly. When the introduction is by way of the alimentary tract, the peculiarities of the portal circulation are such as to compel most of the absorbed products to pass through the liver prior to discharge into the systemic blood stream. Direct intravenous injection involves difficulties of technic, with the possibility of local injuries to the peripheral blood vessels at the seat of operation. It presents dangers of bacterial contamination; the vehicle as well as the drug is immediately foreign to the blood, and other objections have presented themselves. The Council on Pharmacy and Chemistry has taken a decidedly conservative attitude toward the recognition of the scores of products intended for direct intravenous use. The wisdom of this stand has been attested anew by a recent report of Hanzlik[5] of the Stanford University School of Medicine. Intravenous injections of a large variety of substances cause definite and important changes in arterial blood, accompanied as a rule by disturbances in physiologic functions. In experimental animals, upsets in these processes were indicated from changes in blood pressure and in pulse and respiratory rates, ranging from moderate to profound, and frequently resulting in collapse and sometimes in death. Hanzlik has suggested that the basis of the blood and symptomatic changes that resulted from contact with a variety of agents physically and chemically unrelated rests fundamentally on disturbances in important physical and chemical mechanisms of the blood and tissues. It should be noted that many of the untoward effects described are not attributable to the mere toxic properties of the substances tested, for they do not usually behave in the same way when otherwise administered. It is true, of course, that some products are intentionally introduced so as to produce marked systemic reactions, as in the so-called nonspecific protein therapy. Our ignorance in this field still demands the greatest caution and conservatism.[6] As Hanzlik expresses it, the burden of proof rests on those who assert that intravenous injections are not injurious or dangerous.

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[1] Mendel, L. B.: Nutrition: The Chemistry of Life, New Haven, Yale University Press, 1923.

[2] Are Calories Old Fashioned? editorial, J. A. M. A. **85**: 1309 (Oct. 24) 1925.

[3] Takahashi, K.; Nakamiya, Z.; Kawakami, K., and Kitasato, T.: On the Physical and Chemical Properties of Biosterin (a Name Given to Fat-Soluble A) and on Its Physiological Significance, Scientific Papers of the Inst. of Phys. and Chem. Research, Tokyo **3**: 81 (June) 1925.

[4] Levene, P. A., and van der Hoeven, B. J. C.: The Concentration of Vitamin B, II, J. Biol. Chem. **65**: 483 (Sept.) 1925.

[5] Hanzlik, P. J.; De Eds, F., and Tainter, M. L.: Blood and Symptomatic Changes Following the Intravenous Administration of a Variety of Agents and Solutions, Arch. Int. Med. **36**: 447 (Oct.) 1925.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

State Society Insures Employees.—At a meeting of the council of the California Medical Association, September 26, the council resolved that all assistants to the secretary and editor be insured for health and accidents, and that the entire premium be paid by the California Medical Association.

Speakers for Preconvention Period.—The council of the California Medical Association has fixed the date (April 26-May 1), of the next annual meeting of the association to follow the meeting of the American Medical Association at Dallas, Texas. The council designated the first two days as the preconvention period, and authorized the payment of expenses of speakers for the preconvention clinics from Dallas to Oakland, and return.

Society News.—The San Diego County Medical Society and the Imperial County Medical Society held a joint meeting at El Centro, October 24, at which Dr. Maynard C. Harding discussed "Fractures of the Extremities"; Dr. Lewis C. House, El Centro, "Fractures of the Spine"; Dr. Clarence E. Rees, "Fractures of the Skull," and Dr. Charles S. Brooks, El Centro, "Compound Fractures."——Dr. Edgar L. Gilcreest addressed the Alameda County Medical Association recently on "Luncheon Glimpses of Sir William Osler During the World War."——Dr. Walter C. Alvarez, San Francisco, addressed the Contra Costa Medical Society, Richmond, on "Diagnosis in Relation to the Digestive Tract."——*California and Western Medicine* says that the September 15 meeting of the Sacramento Society for Medical Improvement was the largest attended regular meeting of the organization. Dr. Harold Zimmermann, Sacramento, gave an address on "The Present Status of X-Ray Therapy." At the banquet, Dr. William E. Briggs, Sacramento, spoke concerning his trip around the world. The society went on record as sponsoring the medicomilitary units allocated to that county and moved that the secretary send a questionnaire to inquire about the possibility of supplying the medical personnel required.——Dr. James W. Seawell, Healdsburg, addressed the Sonoma County Medical Society, Santa Ana, October 9, on "Urologic Diagnosis by the General Practitioner."

CONNECTICUT

Yale Opens Clinics to General Practitioners.—Yale School of Medicine, New Haven, has opened its clinics to physicians of the state, and physicians from Waterbury, Bridgeport and New Haven now constitute about 15 per cent. of those present at the clinic.

Personal.—Dr. David H. Shelling, Hartford, has been awarded the newly established Caplan research fellowship in pediatrics at the Jewish Hospital, Brooklyn; he will be associated with Dr. Benjamin Kramer, formerly professor of pediatrics at Johns Hopkins University Medical Department, Baltimore.

GEORGIA

Physician on Probation.—Dr. Marion A. Born, Athens, was convicted, November 2, of violation of the Harrison Narcotic Law, it is reported, and sentenced by Judge Sibley to serve one year and a day in the federal penitentiary. The sentence was made probationary for three years. Dr. Born, it is said, will not have to serve his sentence unless within the probational period he should again violate the narcotic law.

ILLINOIS

Hospital News.—"Hillcrest," the Adams County Hospital, Quincy, will erect a fifty-bed addition to cost $30,000.——The Western Suburban Hospital, Oak Park, has contracted for a $450,000 addition.

Smallpox in Infirmary.—Following the discovery of two cases of smallpox in Oak Forest Infirmary, the institution was placed under quarantine until November 19, and the 4,000 persons who make their home there were vaccinated.

Chicago

Bequest to Aid Biologic Science.—The late Miss Helen Culver bequeathed $600,000 to the University of Chicago for the further development of biologic science. Miss Culver gave the university $1,000,000 in 1895 to endow and equip a biologic department. Her recent bequest is not included in the university's $17,500,000 development program.

Hospital Reorganized.—Following affiliation with Loyola University, St. Bernard's Hospital has reorganized its staff with Dr. William S. Hector, chief of the surgical staff, Dr. Joseph P. Smith, chief of the medical staff; Dr. Emil A. Rach, in charge of the obstetrical division; Dr. Jared C. Hepburn, chief of the gynecologic staff; Dr. Bertram C. Cushway, in charge of the radiologic department, and Dr. Sydney S. Schochet, director of the pathologic laboratories.

Resolution as to Laymen Being Public Health Officials.—The council of the Chicago Medical Society adopted the following resolution at its regular meeting, November 10:

WHEREAS, The American Public Health Association at its annual meeting in St. Louis, in October, 1925, listened to an address by one of its members, favoring a new doctor in each community where a health officer is needed, to be known as a Doctor of Public Health, and

WHEREAS, Several institutions of learning have introduced courses in public health whereby a layman as well as a physician may be instructed and in a comparatively short time qualify as a Doctor of Public Health (D.P.H.) and be allowed to advise, qualify and practice preventive medicine, and

WHEREAS, In all probability a bill to license a so-called D.P.H. will be introduced into the next session of the state legislature of Illinois, and

WHEREAS, The Chicago Medical Society believes that all health officials should first be physicians (M.D.), who have the proper knowledge of the sciences concerned in public health, and that such knowledge cannot be gained by any layman in two or three years, and

WHEREAS, Such an arrangement of a layman being a health official places a double expense on the community, since it is necessary for the community to then procure the service of an M.D., in addition to a layman, and

WHEREAS, the state confers on an M.D. the right to practice medicine and surgery in all its branches, while the special licensing of a D.P.H. would be special legislation tending to take from an M.D. that right. Therefore be it

Resolved, That the Chicago Medical Society believes all positions of trust pertaining to public health in any community should be held by physicians (M.D.) and not by laymen holding D.P.H. licenses, and be it further

Resolved, That the Chicago Medical Society views with displeasure any move on the part of the American Public Health Association which may express a desire to replace physicians as health officials by laymen with D.P.H. licenses, and be it further

Resolved, That a copy of this resolution be sent to the American Public Health Association; to all those institutions of learning where courses in public health are given with a view to conferring a D.P.H. degree, and to every state medical society with a request that their component county societies be made acquainted with the proposed activities of a public health association, whose president is a layman.

INDIANA

Society News.—About ninety physicians attended the dermatology clinic conducted by the Tippecanoe County Medical Society at Lafayette, November 12. In the absence of Dr. William Allen Pusey, Chicago, on account of illness, Dr. Francis E. Senear, University of Illinois College of Medicine, Chicago, conducted the clinic at St. Elizabeth's Hospital and gave an address on syphilis. Ten cases were presented at the clinic.

Survey of Lake Michigan Waters.—The field work of the bacteriologic survey being made by the U. S. Public Health Service of Lake Michigan waters off Indiana shores was completed in October. Samples of water were collected from seventy-two points covering an area of 80 square miles and extending 11 miles from shore. The state board of health says that during August this year, under certain wind conditions the pollution of the lake extended as far out as

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[6] Hanzlik, P. J.: Blood and Tissue Changes in Anaphylactoid Reactions, California & West. Med. 23: 161 (Feb.) 1925.

8 miles. The points of maximum contamination were found to be at Indiana Harbor and at the mouth of the Grand Calumet. The work was begun in September, 1924; a laboratory was installed in the South Park Field House in Chicago, and the U. S. Public Health Service furnished the laboratory equipment and an engineer to direct the work. This work is part of a comprehensive survey being made at the request of and in collaboration with the Indiana State Board of Health, the Illinois State Board of Health, the Chicago Board of Health and the Chicago Sanitary District.

KENTUCKY

Lectures on Public Health.—The University of Louisville School of Medicine has arranged a series of thirty lectures on public health, hygiene and preventive medicine to be given at the school on Wednesdays at noon from September 30 until May 26 by members of the faculty, professors in the college of arts and sciences and members of the Kentucky State Board of Health. The lectures are primarily for members of the senior class in the medical school, but a cordial invitation is extended to all members of the medical profession in Jefferson County and Louisville and to others interested. No fees will be charged.

MARYLAND

Hospital News.—Dr. Amos F. Hutchins has been elected president of the staff of the Franklin Square Hospital, Baltimore; Dr. Walter A. Cox, vice president, and Dr. Bernard S. French, secretary.——The thirteenth annual Home Coming Day of the Eudowood Sanatorium at Towson was held, October 25, which about 200 former patients and others attended. Addresses were made by Dr. Henry B. Jacobs, president, board of directors; Dr. William A. Bridges, superintendent, and Dr. George Milton Linthicum of the executive committee.

Personal.—Dr. Bedford Pierce, consulting physician of the York Retreat, England, recently visited Baltimore, Boston, New York and Philadelphia to observe methods of treating mental patients.——Dr. Robert H. Riley, chief, bureau of communicable diseases, state health department, has returned from Massachusetts and Connecticut, where he made a survey of the state health organizations.——Dr. Antonio Fernos, assistant commissioner of health of Porto Rico, recently visited the state health department and the Baltimore city health department.——Dr. Frank J. Powers, physician to the Baltimore City jail, was elected president of the American Prison Physicians' Association, at its meeting held recently in Jackson, Miss.

Law Proposed on Professional Secrecy.—Members of the Medical and Chirurgical Faculty of Maryland will discuss at their next meeting efforts to obtain a law on professional secrecy. The house of delegates of the faculty in April, 1923, adopted a resolution adhering to the principle of professional secrecy, and recommended that the committee on legislation confer with the state bar association regarding the enactment of a statute for privileged communications for the medical profession. Dr. Josiah S. Bowen, then chairman of the legislative committee, after a conference with the president of the Maryland State Bar Association, drew up a proposed statute, based on a similar law in New York. The subject was revived this week, when Dr. William H. Fisher of Centerville was required to testify against his will in a case pending before the county grand jury.

MICHIGAN

Society News.—Dr. Carl D. Camp, professor of neurology, University of Michigan Medical School, Ann Arbor, addressed the Wayne County Medical Society, November 9, on "Vascular Changes as They Affect the Nervous System," and Dr. Paul Titus, Pittsburgh, on "Treatment of Vomiting of Pregnancy."——At the regular meeting of the Kent County Medical Society, November 10, Dr. William R. Vis reported "Fifteen Cases of Nontuberculous Lung Abscess," and Dr. William L. Bettison "Four Cases of Trichiniasis with Recovery."

Diphtheria Campaign.—The state department of health has furnished toxin-antitoxin free since 1921, and in the first ten months of this year mailed out 317,210 c.c. Assisted by local physicians, the department of health has given toxin-antitoxin to 18,111 persons in Ionia, Cass, Washtenaw, Presque Isle, Ogemaw, Montcalm, Alger and Baraga counties, and local authorities have carried on similar campaigns in almost every section of the state. Public health officials will report at the fifth annual conference of health officers and public health nurses, to be held in Lansing, November 18-20, the number of children in their communities protected against diphtheria. The state department of health predicts that the number of children reported as protected at this conference will total almost 100,000.

Roadside Water Supplies.—The state department of health began in July a campaign to protect the roadside water supplies; starting at the Indiana line in the southwestern part of the state, a party traveled north collecting and shipping samples of water to the laboratories at Lansing for examination. Two weeks later a second party followed over the same route to check up on the report which had been submitted in the meantime and to obtain the attitude of the owners of the waters. In all, 425 roadside waters were examined, and 269, or 63.3 per cent. of them, were considered to be safe; the other 157 were judged unsafe. The former were marked with a gray "safe" sign, while wells not approved were not marked at all. A red "not safe" sign was used only at lakes and streams The state department considers that only a start has been made in this work.

MISSOURI

Dr. Horton Indicted.—Dr. Ray B. Horton, Kansas City, was indicted, November 7, by the Jackson County grand jury, says the Kansas City *Journal-Post*, in connection with the "state board of health scandal." The charge, while not revealed, was understood to be third degree forgery based on the filing of false high school certificates by Dr. Horton for persons seeking licenses to practice medicine. He is said to have filed affidavits with Dr. Cortez F. Enloe, then secretary of the state board of health, concerning the premedical education of certain applicants for licenses, some of which the present secretary of the board found were false.

The Adcox Confession.—In his confession published in the St. Louis *Star*, Dr. Robert Adcox says that Owen T. Owen, Chicago, could produce almost any needed educational "credentials." Owen, who it appears had been connected with "medical colleges" in Chicago and elsewhere, frequently quit these institutions, taking with him records, blank grade and attendance certificates and a bundle of blank diplomas. When Owen called on Adcox in St. Louis, he named two questionable Chicago medical schools and several others as institutions on which credentials would be issued, and arranged to charge $50 for credits for the freshman year, $75 for the sophomore year and $100 for the junior and senior years; Adcox was to receive 50 per cent. Adcox relates that on the same day "a friendly medical student" brought a prospect to his home, from whom he secured from Owen a high school diploma and credentials showing attendance at a medical school in Chicago for two years, yet the man had never been in Chicago. "A great many" county superintendents of schools supplied Adcox with credentials. One superintendent brought his successor to Adcox and arranged to sell certificates issued on week days for $10 and on Sundays for $25. Adcox says he bought "a lot of stuff" from this man, who never asked to see a student. Dr. Ralph A. Voigt, who is said to have been indicted in January, 1924, for conspiracy against "public health and morals," came to Adcox with a note from Owen T. Owen to obtain a high school certificate. Voigt, Adcox says, had "credentials" showing that he had attended medical colleges in Chicago for a "couple" of years, which credentials looked like the handiwork of Owen. Adcox fixed up for Voigt, the high school certificate which is now in the files of the Missouri state board of health; Voigt obtained later one of the bogus Potosi High School diplomas and this, Adcox says, is now in the records of the Tennessee state board of health, where Voigt used it to obtain a Tennessee license; still another high school certificate obtained by Voigt, and equally worthless, is among the records of the Texas state board of health, where he obtained a license to practice. Adcox arranged with Voigt to obtain students who might need credentials or "persons who would like to become doctors," and then took Voigt to the "P. & S. College" where he enrolled as a student. Letters soon began "pouring" into the college asking about requirements, tuition, and the standing of the school with certain boards of medical examiners. These letters were turned over to Adcox who wired each individual that he would call to see them within a few days. Adcox traveled, in looking up these persons, to New York, Philadelphia, Washington, Hartford, Richmond, Jacksonville, Birmingham, Memphis, New Orleans, Houston, Fort Worth, Dallas, Kansas City, Tulsa, Oklahoma City, Denver, Salt Lake City, Los Angeles, San Francisco, Omaha and "dozens of other cities." In most instances, he says he found that those who had written college were uneducated men with some money who wanted a "short cut" to a medical degree. They had all learned this was possible through friends. Adcox personally guaranteed these prospects that for a sum of money they would receive a medical diploma. He took some of them back to St. Louis with him, and arranged for others to meet him there after he had prepared their high school certificates and credentials for the first two years in medical school. The books of the medical college were made to show, he says, that the young man had already put in two years. He has heard, he says, groups of students in the corridors discussing things which happened at the college the year before when as a matter of fact not one of them had been there the previous year. It now became necessary for Adcox to make new alliances as there was a demand for credentials of every kind. About this time Frank J. Kenney, alias T. J. Kenney, who was just out of prison, put in his appearance.

NEW JERSEY

Hospital News.—The new $1,000,000 Englewood Hospital building, Englewood, will be opened, November 30, with appropriate ceremonies. The old building of the hospital will be used as a maternity ward. The lobby of the new structure is a memorial to the late Henry P. Davison, the banker, who was on the board of governors of the hospital.

Medical Instruction by Radio.—The Medical Society of New Jersey is broadcasting from Station WHAR, Atlantic City, as part of its program of public education "Ten Minute Talks on Keeping Well" Thursday evenings, 7:30, and is distributing copies of these talks to 150 newspapers of the state. The program, which began, October 22, comprises the following subjects: (1) "The Medical Society of New Jersey—Its Relationship to the Community"; (2) "Periodic Health Examination—What Does It Mean?"; (3) "Am I in Perfect Health?"; (4) "An Ounce of Prevention"; (5) "A Stitch in Time"; (6) "Recovering Lost Ground"; (7) "Keeping Fit"; (8) "How to Avoid Infectious Diseases"; (9) "Focal Infections—How They Menace Health and Life," and (10) "Teeth and Tonsils—What to Do About Them."

Society News.—Dr. William H. Schmidt, Philadelphia, addressed the Atlantic County Medical Society recently on "Modern Therapy in Malignant Disease with Indications for Special Methods."——The president of the state medical society, Dr. Lucius F. Donohoe, the secretary, Dr. John Bennett Morrison, and the editor of the state journal, Dr. Henry O. Reik, addressed the forty-second annual meeting of the Cape May County Medical Society at the Woodbine Colony for Feeble-Minded Males, October 20.——Dr. Thomas McCrea, professor of medicine, Jefferson Medical College, Philadelphia, addressed the Academy of Medicine, Newark, on "Rheumatism."——Dr. Edward J. Klopp, Philadelphia, addressed the Gloucester County Medical Society, Woodbury, October 15, on "Acute Abdominal Diseases," and Dr. Henry O. Reik, Atlantic City, on "Periodic Health Examinations."——Dr. James A. Miller, professor of clinical medicine, Columbia University College of Physicians and Surgeons, New York, addressed the Hudson County Medical Society, Jersey City, October 6, on "Modern Methods of Surgical Treatment of Pulmonary Tuberculosis."——Dr. Henry W. Kice, Wharton, retired from twenty-five years' service as secretary of the Morris County Medical Society at the election of officers in September. Dr. Kice is said to have missed only two meetings during his long service and to take with him in his retirement as secretary the appellation "magna cum laude."

NEW YORK

Dr. Goler Honored.—The Monroe County Medical Association will tender a dinner, December 8, in honor of Dr. George W. Goler, who has completed twenty-seven years as health officer of Rochester. Surg. Gen. Hugh S. Cumming, U. S. Public Health Service, and Dr. Matthias Nicoll, Jr., state health commissioner, among others, have been invited. Dr. Rush Rhees, president of the University of Rochester, will be toastmaster. Among the contributions of Dr. Goler's service at Rochester has been a great improvement in the milk supply, the typhoid death rate and in the number of cases of goiter following the use of iodin in the city water supply; he is said to be largely responsible for the erection of the new Municipal Hospital.

Society News.—The Second District Branch Medical Society, comprising the four Long Island counties, held a meeting with the Associated Physicians of Long Island, October 13, at Hempstead. Dr. Daniel S. Dougherty, secretary of the Medical Society of the State of New York, Dr. Joseph S. Lawrence, executive officer of the state medical society, and Dr. Orrin S. Wightman, editor of the *New York State Journal of Medicine,* were among the speakers. At the evening session, Dr. Nathan B. Van Etten, president of the state medical society, read a paper on the opportunities for service which are before the state society. The scientific program consisted of an exhibition of the two movie films on gastric peristalsis and gastric ulcer prepared by Dr. Lewis Gregory Cole.——The Eighth District Medical Society, at the City Hospital, Buffalo, devoted its morning session, October 7, to discussing activities of the state society, the afternoon to a scientific program and the evening to a dinner and an exhibition of moving pictures and lantern slides. The president and secretary of the Medical Society of the State of New York took part in the meeting. Dr. Edgar R. McGuire, Buffalo, gave an address on "Some Problems in Gallbladder Surgery"; Dr. Nelson G. Russell, Buffalo, "The Acute Leukemias"; Dr. Burton T. Simpson, Buffalo, "A Résumé of Recent Research in Cancer"; Dr. William D. Johnson, Batavia, "The Surgery of the Handicapped Patient," and Dr. Harold A. Blaisdell, Jamestown, "Differential Diagnosis of Pain in the Right Lower Quadrant of the Abdomen."

New York City

Hospital Given a Country Home.—The Hospital for Joint Diseases has been given a country home at Breezy Point, Far Rockaway, comprising 14 acres of land and various spacious buildings and an endowment valued at $1,250,000. The Hospital for Joint Diseases was founded in 1905 by Dr. Henry W. Frauenthal, who is now its medical director. Mr. Frederick Brown has just been elected president of the hospital.

Another Mother's Milk Station.—A bureau for the collection and sale of mother's milk is conducted by the Children's Welfare Federation, 505 Pearl Street. The milk is collected under the supervision of a registered nurse, and distributed each day to hospitals and private patients referred by physicians. Mothers are paid from 10 to 15 cents an ounce and a nominal charge of 25 cents to patients is made, which in needy cases is reduced. The federation operates two units in Manhattan and one in Brooklyn and collects about 150 quarts a month.

Academy Appoints Dr. Malloch Librarian.—At a special meeting of the council of the New York Academy of Medicine, recently, Dr. Thomas Archibald Malloch, Montreal, Canada, was appointed librarian. Dr. Malloch is a graduate of McGill University Faculty of Medicine, where he was resident pathologist and bacteriologist; he served with the Canadian Army Medical Corps during the World War and was Beit Fellow at Oxford. He was selected by Sir William Osler to prepare, in collaboration with another physician, a catalogue raisonné of the 8,000 volumes of classics, pamphlets and incunabula in the Osler collection. Dr. Malloch has resigned as demonstrator in medicine at McGill, assistant physician at the Royal Victoria Hospital, Montreal, and assistant editor of the *Canadian Medical Association Journal,* and will take up his duties at the Academy of Medicine, Jan. 1, 1926.

Society News.—Dr. Wendell C. Phillips, president-elect of the American Medical Association, and Dr. Nathan B. Van Etten, president of the Medical Society of the State of New York, will address the Medical Society of the County of New York, November 23, at the Academy of Medicine, on which occasion the anniversary address will be delivered by the Rev. Cornelius Woelfkin on "Striking the Trails."——The Medical Association of the Greater City of New York gave a symposium on surgery of the sympathetic nerve, November 16, in which addresses were given by Dr. Howard Lilienthal, Dr. Walter A. Sherwood and Dr. Herman L. von Lackum.——The Yorkville Medical Society held a symposium, November 16, on periodic health examinations, in which Dr. Charles R. Austrian, Johns Hopkins University, Baltimore, discussed "Periodic Examinations to Detect Early Pulmonary Tuberculosis"; Dr. Herman O. Mosenthal, "Early Signs of Diabetes Mellitus and Their Significance"; Dr. Israel S. Wechsler, "Early Signs of Nervous and Mental Diseases"; Dr. Harlow Brooks, "Methods of Examination of the Heart and Circulatory System," and Dr. Hyman Goldstein, "The Importance of Periodic Health Examination of Children."——The Yorkville Medical Society will hold its annual beefsteak dinner, December 17, at the Hotel Vanderbilt.——The Brooklyn Dermatological Society, beginning November 16, will meet in the lecture room of the Kings County Medical Society Building, 1313 Bedford Avenue

PENNSYLVANIA

Personal.—Dr. David P. McCune, Jr., has been elected president of the McKeesport Academy of Medicine, Dr. Joseph B. Feeley, vice-president, and Dr. John C. Kerr, secretary.——Dr. Clark D. Stull, Ridley Park, has been appointed surgeon to the Westinghouse Electric and Manufacturing Company to succeed the late Dr. Norman D. Smith. ——Dr. John W. Leckie, Hazleton, has been appointed medical director of the new $450,000 West Mountain Sanatorium at Scranton, which was opened recently.——Dr. LeRoy M. A. Maeder has been appointed acting medical director of the Mental Hygiene Division of the Public Health Association.

Philadelphia

Society News.—The Philadelphia Psychiatric Society held a symposium, November 13, on "The Treatment of Paresis," Dr. Joseph V. Klauder speaking from the standpoint of "The Changes in the Laboratory Findings"; Dr. Nathaniel W. Winkelman on "The Treatment of Paresis as Carried on in Germany with Special Reference to Malarial Therapy," and Dr. George Wilson on "The Treatment of Paresis from the Clinical Point of View."

Program of Medical History.—The College of Physicians offers a program, December 15, in which nearly all the speakers were personally acquainted with the men whose lives they will describe. Dr. John H. Gibbon's subject will be "Samuel D. Gross"; Dr. John B. Deaver's, "D. Hayes Agnew"; Dr. George E. de Schweinitz', "Joseph Leidy"; Dr. Henry R. M. Landis', "J. M. Da Costa"; Dr. Alfred Stengel's, "William Pepper," and Dr. Charles W. Burr's, "S. Weir Mitchell."

TENNESSEE

Society News.—Dr. David H. James addressed the Memphis Urological Society, October 3, on "Some Essential Factors in Kidney Surgery."——Dr. John P. Henry will address the Memphis and Shelby County Medical Society, December 1, on "Diagnosis of Diabetes Mellitus," and Dr. William D. Stinson on "Rhinologic Manifestations of Pelvic Pathology."——The annual dinner and election of officers of the Memphis and Shelby County Medical Society will be December 15.——The Tri-States Medical Association will meet at Memphis, Jan. 26-28, 1926.

TEXAS

School for Water Works Operators.—The annual school for water works and filter plants operators will be held at Fort Worth beginning Jan. 18, 1926, under the auspices of the state board of health, the Fort Worth health and water department, the Texas Christian University and the Texas Section of the Southwest Water Works Association. The school is open to all Texas water works operators without charge.

Milk Supervision.—Since the inauguration of a milk sanitation program by the state board of health during the last year, sixteen municipalities have adopted milk grading ordinances. C. E. Smith, U. S. Public Health Service, has been in Texas the last three months assisting municipalities to arrange their milk supervision programs. The towns which have already adopted the ordinance are Fort Worth, Wichita Falls, Texarkana, Beaumont, Abilene, Cisco, Denison, Corsicana, Marlin, San Angelo, Marshall, Quanah, Mineral Wells, Tyler and Weatherford.

UTAH

Increase in Death Rate.—The Department of Commerce announces that the death rate for Utah in 1924 was 1,042 per hundred thousand of population, as compared with 947 in 1923. The increase is largely accounted for by increases in death rates from mine accidents, pneumonia, measles (from 1 to 20), appendicitis, typhlitis and automobile accidents.

WASHINGTON

Personal.—Dr. R. H. Beach has been appointed in charge of the Northern Pacific Hospital at Tacoma, to succeed Dr. Paul A. Remington. Dr. Beach formerly was in charge of the Northern Pacific Hospital at Missoula, Mont.——Dr. Frederick W. McKnight, Cle Elum, has resigned as city health officer.

Hospital News.—A seven-story addition, costing $200,000, is being constructed to the Swedish Hospital, Seattle, which will make the hospital capacity 210 beds.——The Seattle Detention Hospital for the treatment of women has been abandoned on recommendation of the health commissioner, and a clinic will be maintained for the treatment of women having venereal disease. The action was taken in the interest of economy.

Society News.—The King County Medical Society's program, December 7, will comprise addresses by members of the Veterans' Bureau, Dr. George E. Pfeiffer, chief of the surgical staff, U. S. Veterans' Bureau Hospital, Cushman-Tacoma, speaking on "Surgical Activities in a Veterans' Hospital;" Dr. Dorrell G. Dickerson, neuropsychiatrist, U. S. Veterans' Hospitals, American Lake, on "Neurological Studies in Psychotic Cases"; and Dr. Albert C. Feaman, chief, Tuberculosis Section, Seattle Regional Office, on "Tuberculosis Activities in a Veterans' Bureau Regional Office."——Dr. James Tate Mason addressed the King County Medical Society, November 2, on "Some of the Pertinent Problems of Goiter."

WISCONSIN

Personal.—The commissioner of health of Milwaukee announces that Drs. Arch J. Hood, Samuel G. Higgins, Alexander Montgomery, Jr., Charles A. Fidler and Joseph J. Adamkiewicz have been added to the active staff of the Emergency Hospital.——Dr. Chester L. Carlisle, medical officer in charge of the U. S. Veterans' Hospital at Waukesha, has been transferred to the Veterans' Bureau Hospital No. 81, New York City, to be clinical director.——Dr. Louis M. Warfield, formerly head of the department of medicine, University of Michigan Medical School, Ann Arbor, who recently returned from Europe, has located in Milwaukee.——Dr. William J. Focke has been appointed instructor in medicine and Drs. Louis Fauerbach and Harry M. Kay designated to assist in the course in physical diagnosis at the University of Wisconsin Medical School, Madison.

Vaccination in Milwaukee Epidemic.—Milwaukee had a smallpox epidemic with 535 deaths in 1871-1873, another with 438 deaths in 1876-1877, and another with 274 deaths in 1894-1895; the commissioner of health, Dr. John P. Koehler, considers, therefore, in the *Wisconsin Medical Journal* that the epidemic this year with eighty-seven deaths was "cut short." The first virulent case was reported, Dec. 21, 1924; the number of new cases did not exceed the normal expectancy until March, 1925; the outbreak reached its height in May and dropped to normal in July. The epidemic, therefore, continued only four months instead of at least a year as smallpox epidemics usually do. March 4, the health department warned the public against the approaching epidemic and offered free vaccination; throughout March and April, efforts were made to get the people vaccinated by means of posters in streets, stores and factories, by smallpox bulletins in all large places of employment, special letters to employers, warnings in the papers, and radio talks; during this period only 62,000 in a city of about a half million became vaccinated. Conditions grew worse, and the health commissioner changed from an educational program to one during May of "fright and pressure"; these methods comprised the distribution of pictures of patients suffering from the confluent type of smallpox all over the city, issuing warnings on the screens of moving picture theaters, and publishing daily the names and addresses of people who died of smallpox; a third letter requested employers to have their employees vaccinated and informed them that that if smallpox developed in their factories they would probably be placed under quarantine. This, Dr. Koehler says, "drove in thousands of antivaccinationists," 223,000 being vaccinated in May; finally, almost 100 per cent. vaccination of the school population was obtained. There were other things done, the result of which was that 423,000 people became vaccinated. The greatest number of active cases at one time was 140, and the greatest number of deaths in any week was thirteen; eleven members of one family who had never been vaccinated and who refused vaccination contracted smallpox. Among the twenty-two patients with the hemorrhagic form of the disease, all of whom died, two had never been vaccinated and two were vaccinated twenty-eight and sixty-five years before. Of the ninety-three with confluent smallpox, forty-six died, of whom thirty-nine had never been vaccinated while seven were vaccinated from ten to fifty years before. Of the 386 persons who contracted smallpox, 327 had never been vaccinated, fifty-three had been vaccinated more than seven years before, four more than five years before, and the vaccination history of two was not known. Three infants born of smallpox mothers contracted the disease and died; three undertakers contracted smallpox from the handling of bodies.

There were forty-eight cases among steel and foundry workers, who commonly consider vaccination unnecessary. Many persons who had smallpox years ago had very good vaccination "takes."

PANAMA CANAL ZONE

Report of Health Department of Panama Canal.—The chief health officer of the Panama Canal reported for the calendar year 1924 a death rate in the Canal Zone of 9.05. The death rate for disease alone was 8.01, as compared with 7.14 for 1923 and 7.08 for 1922. The death rate from tuberculosis was 1.01, as compared with 0.69 for 1923 and 0.74 for 1922. Tuberculosis caused 13 per cent. of all deaths from disease during the year. The average population of the Canal Zone during the year was 33,723. The death rate among children under 1 year of age, from all causes, based on the number of live births reported, was 96.54. Of the total deaths for all ages, 37 per cent. were among children under 5 years of age. The admission rate of employees of the Canal Zone for malaria was 16 per thousand. There has been a practically constant residual rate for this disease during the last nine years, the only marked deviation being a rise to 31 per thousand in 1919, which was explained by the importation of many native Panaman laborers into the zone to take the place of West Indian employees who were on strike. Much of the malaria developing in the Canal Zone during the year was contracted outside the sanitated areas, as it has been in the past. There has been no slackening of efforts to reduce mosquito breeding. It has been found advisable to keep under mosquito control the entire shore line of Miraflores Lake and its arms, which is over 25 miles in extent. A practicable method has been found in the use of "oiling boats," from which heated oil is sprayed on the grassy margins with a crew of three men at a cost of less than $250 a month for labor and materials. The oil is heated only to enable it pass readily through the nozzles of the pump in a fine spray. Some large streams are being straightened in the vicinity of Corozal, and the bottoms lined with concrete. East of the Coco Solo River the army is draining swamps and streams for from 1 to 2 miles beyond the army and navy stations east of Manzanillo Bay. Mosquito control work in the Republic of Panama, adjacent to Panama City, was placed under the direct supervision of the assistant chief health officer in October, 1924, this centralizing under one head all field antimosquito work carried out by the health department on the isthmus. All dairy herds supplying milk to the city of Panama and the Canal Zone were given tuberculin tests during the year, and of the 2,000 cows tested 103 were destroyed. Postmortem examination of these animals showed that in only a few instances had the disease advanced sufficiently to make the milk dangerous. Dairies were regularly inspected to insure cleanliness. The entire milk supply of the Canal Zone and of the cities of Panama and Colon was pasteurized before being delivered to customers. None of the more dangerous and destructive animal diseases exist on the isthmus now, anthrax not having occurred in cattle for about two years. Contagious abortion in cattle, which was present several years ago, has disappeared. Col. Weston P. Chamberlain, M. C., U. S. Army, became chief health officer, and Major Tom S. Mebane, superintendent of the Colon Hospital, in June, 1924. The personnel of Santo Tomas Hospital, Panama, ceased to be under the jurisdiction of the Panama Canal, Sept. 1, 1924.

PHILIPPINE ISLANDS

Society Opposes Exemption from Examination.—The Manila Medical Society has adopted a resolution opposing the exemption from examination by the local board of medical examiners of physicians who hold the certificate of the National Board of Medical Examiners of the United States, and directed its committee on public policy and legislation to take all possible steps toward the realization of a more effective opposition to such proposed amendment to the Medical Practice Act of the Philippines. The *Journal of the Philippine Islands Medical Association* recommends organized and individual protests against the proposed amendment, and that physicians in other countries take special courses before attempting to practice in the tropics.

Report on Culion Leper Colony.—There were 140 patients admitted to hospital in the Culion Leper Colony in June and 109 were discharged, according to a report of the chief; there remained at the end of the month 301 patients in hospital. There was a total population in the colony at the end of July of 5,094. There were ten births in the colony during that month. The boat which collects lepers left Manila, August 8, in charge of Dr. Teofilo P. Corpus, and collected a total of ninety lepers; these, with ninety-six more from the San Lazaro Hospital, Manila, were taken to Culion; on the boat was Major Hitchins, chairman of the leprosy research board, Dr. Jose P. Bantug, secretary, and Drs. J. Otto Schobl and Samuel Tietze, members, en route to Culion for the semiannual meeting of the board.

GENERAL

Personal.—The Association of Military Surgeons of the United States awarded the 1925 Wellcome Gold Medal Prize to Lieut. Col. Albert C. Carlton, San Francisco, Medical Reserve Corps, U. S. Army, for his essay on "The Means and Policies Which Will Best Enable This Association to Increase Its Membership and Accomplish Its Patriotic Objects as Stated in Its Constitution."

New Medical Journal.—The first number of the *American Heart Journal* was published in October under the editorial direction of the American Heart Association, with Dr. Lewis A. Conner as editor-in-chief, Dr. Hugh McCulloch as associate editor, and an advisory editorial board of twenty-two members. The journal will cover all phases of cardiovascular diseases, although primarily it will be clinical in character and will serve not only heart specialists but also well trained general practitioners.

Society News.—Dr. Charles C. Bass, dean, Tulane University of Louisiana School of Medicine, New Orleans, was elected president of the Southern Medical Association at the annual meeting in Dallas, November 12; Dr. Oscar M. Marchman, Dallas, first vice-president; Dr. Marye Y. Dabney, Birmingham, Ala., editor, reelected, of the *Southern Medical Journal,* and C. P. Loranz, Birmingham, secretary-manager. A proposal was made to hold joint meetings with the Southern Surgical Association, which will be acted on at the next annual meeting in Atlanta.

Dr. Royer Appointed Medical Director.—The National Committee for the Prevention of Blindness announces that Dr. Benjamin Franklin Royer, Philadelphia, has been appointed medical director and that the committee will now be in a position to cooperate more extensively than in the past with the medical profession and with local state and national health officers and associations. Dr. Royer comes to the National Committee from the American Child Health Association, where he was engaged in making a health survey covering eighty-six cities (The Journal Oct. 10, 1925, p. 1146). He was formerly epidemiologist and chief medical inspector for the Pennsylvania State Department of Health and for four years chief executive of the Massachusetts-Halifax Health Commission in Nova Scotia.

Postgraduate Work in Hungary.—The American Medical Association of Budapest and the Hungarian Medical Postgraduate Committee have issued conjointly an official medical guide of postgraduate work in Hungary. The president of the former organization, Jan. 1, 1925, was Dr. Richard A. Leonardo, residing in Rochester, N. Y., and the secretary Dr. Leslie B. White, whose residence is in Salt Lake City. The Hungarian Postgraduate Committee is named by the Hungarian royal ministry for Public Instruction every five years and is the highest official body for postgraduate instruction in the country. The objects of the American Medical Association of Budapest are to promote the scientific advancement and social intercourse of its members, to provide information as to the scope and relative value of courses offered, and to furnish data to new members in regard to rooms, restaurants, expenses, etc. The guide book shows what courses are given at the University of Budapest with the names of instructors, location and the staff of the clinics, as well as similar information concerning classes at the University of Szeged, the University at Pécs and the University at Debreczen. It was decided at a conference of the American Medical Association of Budapest with the orientation committee of the Hungarian Medical Postgraduate Committee that English-speaking physicians will not be allowed to do postgraduate work in Hungary unless they are members in good standing of the American Medical Association of Budapest. The address of the latter organization is Gellért-tér 1, Budapest, Hungary.

Radiological Society of North America.—The eleventh annual meeting of this society will be at Cleveland, Ohio, December 7-11, at the Hotel Cleveland, where the exhibits and scientific sessions will be held. There will be symposiums on lymphoblastoma, bone tumors, children's diseases, chest diagnosis, kidney diagnosis, gallbladder diagnosis, toxic goiter and nonmalignant pelvic conditions. Among the speakers participating will be Drs. Dallas B. Phemister, Chicago; George R. Minot, Boston; Evarts A. Graham and Bethuel B. Vincent Lyon, St. Louis; George W. Crile and Allen Graham, Cleveland; Thomas E. Carmody and William W. Wasson, Denver; Jacques Forestier, Aix-les-Bains, France; Owsley Grant, Louisville; Arthur U. Des Jardins, Rochester, Minn., and Howard E. Ruggles and Lloyd Bryan, San Francisco. Among the original contributions will be "Erythema Doses in Absolute Units," Otto Glasser, Ph.D., New York; "Report of the Committee on Standardization of X-Ray Measurements," Dr. Edwin C. Ernst, chairman, St. Louis; "Radiological Exploration with Lipiodol," Dr. Jacques Forestier, Aix-les-Bains, France; "Clinical Aspects of the Treatment of Diphtheria Carriers by Roentgen Rays," Dr. Ethel D. Humphrys, Denver; "Biophysical Effects from the Treatment of Diphtheria Carriers by Roentgen Rays," Sanford Withers, Denver; "Cholecystography by the Oral Method," Drs. Lestern Levyn and A. H. Aaron, Buffalo. There will be motion picture films on "Gastric Ulcers," Dr. Lewis G. Cole, New York, on "X-Ray Motion Pictures of the Thorax," Dr. Howard E. Ruggles, San Francisco, and on "Roentgen Rays," by Dr. Friedrich Voltz, Munich (to be shown by Dr. Otto Glasser).

FOREIGN

Lister Ward Rebuilt.—The ward at the Glasgow Infirmary, Scotland, in which Joseph Lister did his early work in antisepsis and which was dismantled a year ago, has been purchased by the firm of Burroughs Wellcome and reerected in London.

Japanese Government Subsidizes Scientific Research.—The Japanese government granted for the present fiscal year 65,000 yen to encourage scientific research, and this amount has been awarded by the Department of Education to 150 research workers in governmental schools, private colleges, special schools and institutes. The amount of the subsidy formerly, previous to the adoption of a retrenchment policy by the government, was more than 120,000 yen. Among the persons to whom awards were made are: Prof. S. Okada for "Studies on Basal Metabolism and Nourishment"; Prof. T. Nagayama, "Studies on Vitamin C"; Prof. M. Yoshioka, "Studies on Immunology"; Prof. G. Hiramitsu, "Histologic Studies on Nervous System with Special Reference to Intellectual Development"; Prof. I. Matsuo, "On the Function of the Liver," and Prof. I. Tagaki, "Prophylaxis of Typhoid Fever and Dysentery with Reference to Food and Drink."

Memorial to Hippocrates.—Dr. Ernest M. Neville, London, England, designed and made a memorial to Hippocrates which has been on exhibition to leading British physicians and was inspected on the occasion of the visit of the Inter-State Postgraduate Assembly of America. A photogravure de luxe of the memorial will be published in limited numbers for the medical profession only. The memorial is, says the *Lancet*, the "Oath of Hippocrates" in a setting of classic Greek antiquity. The oath is in the original Greek, side by side with the English translation, engraved on tablets which are flanked by figures from the temple of Erechtheus on the Acropolis at Athens, and on pedestals which are replicas of the original wall in which the caryatids of the Erechtheion stood. The caryatids support the entablature and the pediment, the center of which is held by the head of Asclepius. The whole structure of the temple rests on seven steps, the background is bordered by a classical design, and the original is 5 feet by 5½ feet.

Personal.—Dr. M. Chikamori recently arrived at the Dairen Hospital, Shimmeicho, Dairen, South Manchuria, to take up his duties as surgeon to the hospital. Dr. Chikamori is from Japan.——A special medical meeting was held at Dairen, August 28, in honor of Dr. Omi, formerly superintendent of the Dairen Hospital.——The *Deutsche medizinische Wochenschrift* relates that the honorary gold medal of the faculty of the University of Hamburg was awarded at the recent silver jubilee of the Institute for Ship and Tropical Diseases to Profs. Aráoz Alfaro and Castex of Buenos Aires, Gómez, the president of Venezuela, Dr. Münnich of Valparaiso and Professor Mingazzini of Rome. An honorary degree was conferred on Professor Giemsa, Hamburg.——The French Académie de médecine has appointed Professor Bazy as its representative on the board of the Carnegie Foundation.——A Hanover court has condemned Dr. Feige, of Wulfel, to eighteen months in the penitentiary for an alleged abortion.——Professor Semashko, Moscow, commissioner of public health in Soviet Russia, recently spoke at the Paris faculté de médecine on medical organization in Soviet Russia. He described in particular the official sanction of the practice of abortion in the regular hospitals "while waiting for the propaganda in favor of maternity to bear fruit." The aim is to combat clandestine abortion and to safeguard the women's health.——Dr. Lahm, roentgenologist of the women's clinic, at Dresden, was fined 3,000 marks, and his assistant and the nurse given prison terms, recently on account of the death of two patients from roentgen-ray burns. Dr. Lahm had had nothing to do with the cases, but was held responsible for his choice of helpers. On appeal to a higher court, Dr. Lahm was acquitted, but the prison term for his assistant was increased to ten months.——The address of the treasurer of the fund being collected in tribute to Dr. Charles Richet, Paris, on his seventy-fifth birthday, is M. Petit, 70 rue Julien, Vannes, Seine.

Deaths in Other Countries

Dr. Urban Pritchard, emeritus professor of aural surgery, King's College, London, formerly co-editor of the *International Archives of Otology,* author of a textbook and many articles on diseases of the ear, for many years British representative on the Committee of Organization of the International Congress of Otology, and formerly president of the congress; recently, aged 80.——**Dr. José Ingenieros,** professor of experimental psychology, Buenos Aires, author of numerous works on biologic psychology, simulation of insanity, and on sociology.

Government Services

Research Section in Veterans' Bureau

Having been advocated by the Medical Council of the U. S. Veterans' Bureau, approved by the medical director and authorized by the director, a research section has been created, and Dr. Philip B. Matz has reported to the central office for duty as chief. The purpose of the section is to study available medical data, the results accomplished, the developments of new policies, and the investigation of standards in medical centers for improvement of clinical work and the furtherance of research. The chief will be responsible for the study of the clinical material in the hospitals and outpatient departments of the bureau, with particular reference to the results of treatment. He will survey the records kept in the central office and in the field to determine their adequacy for the purpose of investigation. Certain laboratories of the bureau will be designated as research laboratories, which in addition to caring for the routine of the institutions concerned will engage in broader work to be assigned from time to time. These laboratories will also be distributing centers for culture mediums, standardized solutions, Wassermann reagents, typhoid and other cultures, and various agglutinating serums.

World War Statistics Completed

The Surgeon General of the Army announces that Volume XV of the "History of the Army Medical Department of the World War" has been completed. This volume contains medical and casualty records for the United States Army and completes the war statistical work of the Surgeon General's Office, with the exception of special statistical material as may find place in the professional volumes. The present volume was prepared under the supervision of Major Albert G. Love, medical corps. Three statistical summaries have been published heretofore as a part of the Army Medical History of the World War, the first, "Physical Examinations of the First Million Draft Recruits: Methods and Results," published in 1919, was a study of the physical examinations of the first million draft recruits who were sent to military camps; the second, "Defects Found in Drafted Men," published in 1920, was a study of the physical examinations of all selective service men of the first and second registrations who were rejected by the local boards as physically or mentally unfit for military service; and also of approximately two million selective service men sent to military camps. The third, "Army Anthropology," was published as Part I of the Statistical Records. The Army Medical Corps proposes to publish later casualty statistics based on studies of complete records of all the individuals concerned. About twelve million individual medical records were received in the Surgeon General's Office during the World War, all of which have been used in preparing the latest volume

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 31, 1925.

The Viruses of Vaccinia and Variola

Dr. Mervyn Gordon, F.R.S., has reported to the Medical Research Council researches which he has made on the viruses of vaccinia and variola and which seem to constitute an important advance and throw light on the disputed question whether the mild form of smallpox that has recently prevailed in this country and has been termed alastrim is a separate disease or not. Dr. Gordon employed the skin of the rabbit as a reagent for detecting the presence of vaccinia virus and made his tests quantitative by diluting his material to a known degree. Specific antibodies appeared in the blood of the rabbit after inoculation with vaccinia, and the serum was found protective to other rabbits against the disease. The virus of vaccinia was affected by gravity, for it could be spun down to the bottom of a tube by centrifugalization. A suspension of vaccinia virus gave negative results after passage through a Berkefeld filter, but in certain circumstances the virus was found to be filtrable. The conclusion drawn is that the virus is particulate. On testing the permeability of the various surfaces of the rabbit, it was found that the virus could make its way through the nasal mucous membrane, the ocular conjunctiva or the external auditory canal and produce immunity. Under natural conditions and in the complete absence of trauma, the nasal mucosa was by far the most susceptible and permeable to the virus. When a small quantity was planted on it, after an incubation period of from six to eight days, acute nasal catarrh developed. The virus was plentiful in the discharge. Later catarrhal bacteria, such as pneumococci, could be found. These facts raise the question whether the main natural mode of spreading of this bovine disease may not be by the respiratory tract, rather than fortuitous cutaneous inoculation, as supposed. When an attempt was made to obtain specimens of variola for investigation, it was found that the cases occurring in this country were clinically of two types. The classic form of variola with its clinical severity and high mortality in the unvaccinated is now comparatively uncommon. The bulk of the cases were of the benign form known in other countries as alastrim. As alastrim appears to breed true, this vast difference from typical smallpox raises the question whether the disease may not be due to a different virus. Garrow has gone so far as to suggest, chiefly on epidemiologic and clinical grounds, that the two diseases are different and that the mild one should be called "paravariola." Dr. Gordon compared the viruses of alastrim and confluent smallpox as regards pathogenicity, immunity relative to vaccinia and resistance to heat and disinfectants. Both viruses were found to be inactivated by exposure for half an hour to 55 C. and were destroyed by potassium permanganate in a dilution of 1 : 10,000. Animal experiments with virus obtained from the Gloucester epidemic of alastrim showed that it had some protective effect against vaccinia. Rabbits and monkeys were inoculated cutaneously with the viruses of alastrim and confluent smallpox. Neither virus affected the rabbit, but both gave positive results in the monkey, producing a local papulovesicular lesion which was more severe with the virus of confluent smallpox. Vaccinia protected the monkey against both forms of variola virus, and the action was reciprocal, but the degree of protection afforded by variola against vaccinia was inferior to that afforded by vaccinia against variola. Neither virus afforded any pronounced degree of protection to the rabbit against vaccinia. It is suggested that in the future some of the laboratory reactions may have an application in the diagnosis of smallpox. Antivaccinal serum prepared from the rabbit was found to give a positive result, both in complement fixation and in agglutination with material from five outbreaks of variola, three of the alastrim type and two of the severe type. Control experiments with material obtained from cases of varicella proved negative. By none of the tests could any difference be detected between the viruses of the alastrim and the severe types of smallpox, except in regard to virulence to the monkey.

Smoke Pollution and the Hygienic Significance of Sunlight

The great attention now given to heliotherapy and other forms of light treatment has served to produce a greater realization of the evils of smoke pollution of the atmosphere. At the annual conference of the British Commercial Gas Association, Dr. R. Veitch Clark, health officer of Manchester, said that the abolition of smoke was a thoroughly feasible proposition and would do more for the improvement of health in our industrial centers than any other action. The sunlight treatment for the cure and prevention of rickets and tuberculous diseases at institutions in Hampshire and North Wales had given results quite as striking as those obtained in Switzerland. It was of great importance to adopt any procedure that would enable the solar radiations to reach our bodies in the natural way. Ultraviolet rays would not pass through clothing, and the modern fashions whereby women exposed their arms and necks were to be commended. It was the continued lack of sunlight and the pollution of the air which made men old at 40. Manchester had only 70 per cent. of the sunlight enjoyed in villages 5 miles away.

Prof. J. W. Cobb, Livesey professor of coal, gas and fuel industries at Leeds University, said that the greatest material difference between civilized and primitive man was the extent to which the former had come to make use of the effect obtainable by burning fuel. Apart from the waste of chemical wealth involved in burning coal and the production of smoke, raw coal was a bad fuel, because it was not efficient for heating. In an ordinary coal fire, only from 20 to 25 per cent. was made available for warming the room. Mr. R. W. Ascroft, late of the food production department of the board of agriculture, said that much damage was caused to the trees and plants by lack of light. More extensive use of gas, coke and electricity would help diminish the amount of sulphurous acid and reduce the damage to vegetation.

Bernard Shaw and the General Medical Council

Considerable sympathy has been expressed in the press for an anesthetist, now aged and past work, whose name was removed from the medical register by the general medical council because he administered anesthetics for a bone setter named Barker, who was knighted a short time ago. The conferment of this honor on the bone setter is regarded as a vindication of him as well as of the anesthetist. In characteristic fashion, Bernard Shaw has plunged into the fray. He repeats the argument, dealt with in a previous letter (The Journal, October 10, p. 1147), that the council was merely acting with the tyranny of a trade union. Shaw denies that he is "down on doctors." "As a matter of fact," he says, "few can have had more or better doctor friends than I; indeed, that is why my utterances have been so well informed." He then extols bone setters and osteopaths as superior to the regular profession, whose technic he considers out of date. It is curious that such irregular practitioners receive a good deal of support from educated people. But this may be explained in various ways—people will resort to anything when they have failed to get relief from regular practitioners. Blind manipulations may by chance produce some result, especially when they can be performed with immunity as to possible consequences, and suggestion no doubt plays an important part.

PARIS

(From Our Regular Correspondent)

Oct. 26, 1925.

The Bacteriophage in the Treatment of Bubonic Plague

In the *Presse médicale,* d'Herelle recalls that, in 1920, he isolated in Indo-China various strains of bacteriophages virulent for *B. pestis bubonicae.* One of these specimens, isolated at Bac-Lieu from the excreta of a rat after an epidemic of plague, was highly virulent from the start. After establishing that subcutaneous injection of the filtered bacteriophage culture caused no disturbance in the guinea-pig and subsequently none in himself, d'Herelle was about to employ the bacteriophage in the treatment of plague when he was suddenly recalled from Indo-China. He has recently applied the treatment, with good success, in Egypt, where he is the director of the maritime sanitary council and of the quarantine board. His report contains his observations in four cases of bubonic plague that developed on a steamer anchored in the harbor of Alexandria and treated by him in the quarantine hospital.

The bacteriophage cultures used in the treatment were prepared thus: To 10 c.c. of a culture of *B. pestis bubonicae* (cultivated in bouillon for twenty-four hours) was added 3 c.c. of fresh bouillon inoculated with 0.02 c.c. of a previously prepared bacteriophage culture of high virulence for the plague bacillus. After being heated in an autoclave for twenty hours at a temperature of 37 C., bacteriophagia being then complete, the clear fluid was filtered and the patients were inoculated therewith directly in the buboes. In the three cases in which the culture was injected within twenty-four hours following the appearance of the bubo, the general condition of the patients improved rapidly within a few hours after the injection. In the fourth case, the intervention not having occurred until the third day, no definite improvement was noted until a few hours after the second injection. These injections caused no local or general reaction. In addition to the expected bacteriophagic action in vivo, injection of the bacteriophage exerts an antitoxic action.

In 1921, d'Herelle published his observations on five patients with bacillary dysentery treated by ingestion of a bacteriophage culture. He did not claim that the specific treatment of dysentery had been discovered but admitted that the facts were convincing to him personally. This treatment, since applied in tens of thousands of cases, has confirmed his belief.

D'Herelle now asserts that bacteriophage therapy should constitute the specific treatment for plague. From 1 to 2 c.c. of a very virulent bacteriophage culture should be injected as soon as possible. Since the treatment is harmless, it can be given as soon as the diagnosis becomes clinically probable, without waiting for bacteriologic verification. A single injection is indicated if the temperature falls steadily; otherwise, a second, or even a third, injection may be given. In the absence of buboes, in septicemic and pneumonic cases, intravenous injections should be tried.

Filtrable Elements of Tuberculous Virus

M. Calmette has recently communicated to the Academy of Sciences the results of experiments of Calmette, Valtis, Nègre and Boquet showing that, if one passes through Chamberland filters tuberculous tissues or cultures of tubercle bacilli, one obtains in the filtrate substances invisible under the microscope yet so virulent that, when inoculated into pregnant guinea-pigs, they pass through the placenta and infect the fetus, which, when killed at birth, is sometimes the bearer of glandular lesions that contain tubercle bacilli presenting all the specific characteristics.

These observations open up a new chapter in the history of filtrable forms of tuberculous virus, which constitutes an exceedingly interesting acquisition in bacteriology. These findings may be an aid in correcting our views of the problem of parasitic heredity in human tuberculosis.

Arteriotomy in Embolism

Lian and Moure report excellent results from arteriotomy in embolism of the axillary artery. Arteriotomy has sometimes been attempted in exploring for projectiles, in the limbs, and unsuccessful attempts to open up thrombosed arteries have been made. But the true indication for this procedure is limited to nonseptic, sudden and recent emboli, which, coming from the left heart, obliterate a healthy artery that is easily accessible.

Lian and Moure saw a case of embolism of the right axillary artery twenty-four hours after the accident had occurred, and they localized the obstruction. Arteriotomy was performed under local anesthesia and resulted in the complete restoration of the arterial circulation in the limb.

In the case reported, etiology and symptoms (sudden pain, pallor, weakness of the arm, preservation of pulse beats in the subclavian artery and in the axillary artery as far as the apex of the axilla, disappearance of pulse beats in the lower portions of the axillary artery and in the brachial artery) pointed plainly to embolism of the axillary artery, while palpation revealed a circumscribed swelling of the arterial trunk, thus indicating the probable site of the embolus. In the presence of such symptoms one should not usually break up the embolus by massage of the artery, for this may give rise to further embolisms and to peripheral gangrene. However, such technic is permissible if the condition of the patient contraindicates more radical intervention. It is advisable to wait a few hours before intervening surgically. After a time—especially in cases in which the embolus is not lodged at a critical point—the collateral circulation may gradually gain control of affairs. But inconsiderate delay may cause irremediable lesions of the arterial wall and further extension of the blood clot. When operating, care should be taken to avoid breaking up a blood clot and to prevent the onward passage of emboli. With this object in view, it is well to clamp the artery on the distal side of the obliterated point. Arteriotomy in embolism is an excellent operation which deserves to be accepted as a routine practice and should not remain an experimental curiosity.

JAPAN

(From Our Regular Correspondent)

Oct. 21, 1925.

The Far Eastern Tropical Medicine Congress

The Far Eastern Association of Tropical Medicine was organized formally in Manila in 1910, just a decade preceding the birth of the League of Nations. Established as the mutual undertaking of medical scientists in the Far East, it has contributed to a considerable extent to the promotion of medical research especially on tropical and semitropical diseases. The congress meets every two years, and the fifth meeting was held in 1923, in Singapore. The sixth congress in progress in Tokyo throughout the week commencing October 12, was the greatest of its kind ever held in Japan — in fact, in the world. More than 700 members, including 124 from foreign countries, attended the meeting, and altogether some 250 papers on medicine appliable to the Far East were discussed by the delegation. Among the most important subjects considered were beriberi, port quarantine, and leprosy. On the morning of the 12th, the congress was opened by speeches of welcome by the premier, Dr. Baron Hozuni, president of the privy council, and Dr. Baron Kitasato, president of the congress. On the evening of the same day, the delegates attended a banquet given by the premier at his official residence.

At the first technical discussion, which was conducted in English, French, Japanese and German, a number of scientists and delegates who have spent years in the study of beriberi presented papers. Among them were Dr. C. D. de Langen, representing Java, and Dr. O. Deggeller, also from Java, the former advocating international control of beriberi, the latter discussing the means of proving rice the cause of the disease. Dr. Fujinami gave a paper on "The Historical Review of Research on Beriberi in Japan," which may be thus summarized:

Dr. Okajaki's historical investigation on this disease reports some relation between its appearance and the eating of polished rice. Researches were made by medical men of early times following the method of old Oriental medicine along clinical lines. Since the introduction of modern medical science into Japan, many scientific investigations concerning this disease have been carried out by the Japanese, on the basis of which much discussion regarding the etiology and pathogenesis of the disease has arisen. Some original ideas were introduced and important discoveries have been made by them. The existence, for example, of "suckling beriberi" was established. The investigators have been divided in their opinion as to whether beriberi is caused by infection, intoxication or a disturbance of nutrition. In this connection it is important to note that the proportion of men in the Japanese army and navy suffering from beriberi has greatly diminished since 1883, and in 1884, dietetic reforms were introduced. Since the introduction of experimental feeding of chickens, numerous similar experiments have been carried out in Japan. These have become increasingly exact both in birds and in mammalia, in the use not only of polished rice but also of other foods deficient more purely in vitamin B. Observations of anatomic, physiologic, and chemical conditions have led to earnest discussion regarding the similarity of human beriberi and the disease caused by vitamin B deficiency. Experiments in introducing into the human body beriberi-like disease by a diet deficient in vitamin B were successful. Systematic clinical investigations on treatment and prevention of beriberi were carried out. Studies have been made among various classes of industrial workers, crews, ship-passengers, soldiers and prisoners. It is noteworthy that the society for the study of beriberi, which was established in the war department in 1908, has greatly stimulated scientific investigation and encouraged practical means of prevention of this disease in Japan.

On the 15th the sectional session passed the following resolutions, which were drawn by ten delegates representing Java, the Federated Malay States, Siam, Japan, Korea, the Philippines and China, all rice-eating countries:

> Whereas, There is enormous loss of life, with corresponding invalidism and disability, due to deficient diet;
>
> Whereas, The deficiency may be corrected by the use of freshly undermilled rice or by the addition of accessory food;
>
> Whereas, Notwithstanding extensive research work in many countries nothing has been brought forward to controvert the disappearance of beriberi when an adequate diet is used;
>
> Whereas, A suitable test is desirable to determine the presence of sufficient vitamin B and accessory substances in rice;
>
> Whereas, Educational measures to promote the use of adequate diet are highly desirable; therefore, be it
>
> *Resolved,* That this Sixth Congress of the Far Eastern Association of Tropical Medicine considers it highly desirable that where overmilled rice forms a staple diet steps should be taken to discourage use of rice from which essential food factors have been removed and that safe storage be provided for it and furthermore that the use of accessory food be encouraged; therefore, be it further
>
> *Resolved,* That the Far Eastern Association of Tropical Medicine considers beriberi a preventable disease and that each country be urged to take vigorous measures to combat its ravages; therefore, be it further
>
> *Resolved,* To ask the Health Section of the League of Nations to include beriberi among the diseases against which it is warring; therefore, be it further
>
> *Resolved,* That governments encourage research toward developing a practical test for rice that may cause beriberi when used as a staple article of diet.

The next congress will be held in India in 1927.

Hospitals Restored in Tokyo

The private hospitals destroyed in the great earthquake and conflagration in 1923 were as many as 132, and restoration seemed to be a matter of great difficulty. But, according to a recent report, 113 have been almost completely restored. Ten hospitals are said to be under reconstruction and repair, and in the course of this year almost all of them will be restored to their original condition.

The Society of Endocrinology

At the instance of Dr. Tsuji of the Kyoto Imperial University College of Medicine, a Society of Endocrinology was organized for the first time in Japan. Prof. Dr. Tsuji is one of the most noted students of endocrinology in this country. The society placed a journal in circulation as its organ, of which the first number was issued recently. It will hereafter be issued every other month. The first number will contain an article on the thyroid gland, by Dr. K. Tsuji, and articles on the function of the thyroid gland in beriberi and in B-avitaminosis of the dog; the change of the cervical sympathetic nerves in exophthalmic goiter; the change of blood characteristics under the influence of insulin; influence of the thyroid gland and epinephrin on the quantity of lactic acid in viscera of living matter; the influence of the poisonous matter of tubercle bacilli on the suprarenal capsule and thyroid gland, and the value of insulin.

BELGIUM

(From Our Regular Correspondent)

Oct. 15, 1925.

The New President of the Red Cross Society

Dr. P. Nolf, professor at the University of Liége and former minister of the sciences and arts, has been appointed president of the Red Cross Society, by the king of Belgium. When Dr. Nolf entered on his new duties, Aug. 5, 1925, ceremonies were held at Red Cross headquarters to which the International Committee was asked to send a representative. M. F. Barbey, the Swiss minister at Brussels and honorary member of the International Committee, welcomed the new president, and, in turn, the new president expressed his desire to maintain the best relations with the International Committee.

The Depage Foundation

The executive committee of the Depage Foundation held a meeting recently under the chairmanship of Prof. Jean Verhoogen. The amount subscribed to the foundation thus far is 150,000 francs. The campaign is to be intensified with a view to collecting sufficient funds to carry out a project, which will include: (1) the creation of a health center; (2) a subsidy to the laboratory of experimental surgery, and (3) the erection of a memorial.

The Unification of Drug Formulas

In September, 1902, the first International Drug Conference was held with a view to the unification of formulas for the more powerful drugs. Twenty powers were represented at this first conference. As a result, an international agreement was signed, Nov. 29, 1906, providing for the unification of the formulas of forty-nine different drugs and establishing rules applicable to other substances. This was acclaimed as an aid in avoiding errors, for in one country drugs of the same name may be more active than in another country, or the same name may represent entirely different products in different countries. Conditions as they had existed exposed the patient to accidents or even death.

The Belgian government recently called the second International Drug Conference at Brussels, under the chairmanship of M. Hairs, professor in the University of Liége. Twenty-six powers sent about forty representatives chosen from among their most distinguished pharmacologists. Of the important work accomplished, we may mention unification of arsenic and bismuth compounds, unification of methods of biologic dosage, and of maximal doses; the adoption of a particular style of bottle, making it possible to distinguish at a glance drugs intended for internal use from those used externally; discussion concerning the creation of a permanent international council for revision of pharmacopëias, and proposals concerning the technic for the preparation of standard-unit extracts. The Swiss delegation proposed that the future international council for the revision of the pharmacopeias submit these proposals to a thorough examination. This resolution was passed unanimously.

With reference to arsphenamins, the following resolution was unanimously adopted:

The second International Drug Conference calls the attention of the governments to the need of chemical as well as biologic control of arsphenamins. It invites the governments to appoint competent persons to make researches on samples of arsphenamins and to send to the permanent secretariat the results of their researches, in order to secure bases for the proposed chemical control.

With regard to methods of biologic dosage, the conference passed a resolution that (1) biologic standardization be introduced, so far as it is necessary and useful, in the pharmacopeias; (2) the pharmacopeias—unless there are sufficient reasons to the contrary—shall adopt the methods which have been or which shall be recommended by the health section of the League of Nations, and (3) the commissions appointed for the revision of the pharmacopeias shall transmit to the health section of the League of Nations any observations or suggestions concerning these methods.

Lateral Cystoradiography

M. Marion of Paris has presented to the Société belge d'urologie a description of lateral cystoradiography, a method devised by Blanc and Négro. This is the technic: The patient lies with the body inclined at an angle of 45 degrees, the legs being slightly flexed. The central rays fall perpendicularly on a point of the wall midway between the anterior superior iliac spine and the middle of a line joining the umbilicus and the pubic symphysis. This method of roentgenographic exploration is the only one that makes possible detection of certain lesions of the bladder. Marion presented two cases illustrating the value of lateral cystoradiography, one of which showed two diverticula of the bladder, one anterior and the other posterior, and the other a vesicorectal fistula. With anteroposterior radiography, the significant shadows were superposed on that of the bladder.

Pseudotuberculosis

Before the Société belge d'études sur la tuberculose, Dr. Maffei, aided by many roentgenograms, recently gave a review of pseudotuberculous bone affections. He included various types of osteochondritis (frequent in the hip, the metatarsus and the scaphoid), deformities from rheumatism, osteomyelitis of atypical form, osteomyelitis (chronic from the start), bone cysts with fibroid degeneration, rachitis changes, osteosarcomas, congenital bone malformations and postparalytic bone dystrophies. Skin reaction is only a secondary feature in the diagnosis, which should be based on a clinical examination, observation and the roentgenographic test. In this manner, one may avoid the frequent errors which lead to the application of long immobilizations.

Colibacilluria and Anticolibacillus Serum

At the annual session of the Société belge d'urologie, Dr. Chevassu of Paris reported the first results of the use of Vincent's anticolibacillus serum. Serotherapy was employed only in infections that had not responded to ordinary treatment. Twelve patients with persistent colibacilluria were treated according to Professor Vincent's technic: a subcutaneous injection of 10 c.c. repeated four days in succession. In seven patients the urine rapidly became clear, a clinical cure. In three patients, cultures of the urine were taken two weeks or less after the clinical recovery, and in two of these three patients the cultures remained negative. The five patients who did not improve presented advanced colibacillary infection: a prostatovesiculitis, a periureteral abscess, a perinephritic phlegmon, a pyonephrosis, and even renal tuberculosis. The failure of serotherapy in these cases does not invalidate the method, and it seems indicated especially in forms of colibacillary infection that have not as yet given rise to marked lesions. Secondary localizations, however, do not seem to be susceptible to serotherapeutic treatment alone.

Polycystic Kidney and Pyelography

In some difficult cases, Dr. François has endeavored to diagnose polycystic kidneys by pyelography. In four cases he noted two malformations of the pelvis and calices, which offered, however, nothing peculiar, but two other cases showed a normal pelvis, with primary and secondary calices elongated and presenting multiple ramifications.

GENEVA

(From Our Regular Correspondent)

Oct. 31, 1925.

Automobiling and Kidney Function

The influence of automobiling on renal affections is now being considered by the profession here. Recent researches show that the functioning of kidneys not perfectly normal may be influenced by prolonged and repeated automobile rides. When the renal lesion is not marked, oliguria occurs only after some time, ceasing shortly after the ride and usually compensated by a polyuria. But repetition of this oliguria eventually has a deleterious effect, and in more advanced renal processes the oliguria is more sudden, uniform and prolonged. Orthostatic albuminuria is generally aggravated while, on the contrary, digestive albuminuria is improved by reasonable use of the automobile when the patient's general condition is satisfactory. The automobile may be regarded as a factor in the production of uremic accidents.

In some subjects, general congestion of the urinary system may be improved by moderate automobiling. Slight congestive attacks when no gross lesions of the prostate, rectum or the uterine adnexa are present may be benefited by moderate and interrupted automobiling, while reduction of diuresis by this means, especially nervous polyuria and frequency, may ensue; but such instances are not frequent. The cause of these effects on the kidney is the vibration of the car and not the jouncing. These influences of automobiling may reveal an unsuspected renal lesion or, on the other hand, relieve any doubts as to proper renal functioning.

Narcotic Laws

The Swiss federal law controlling the sale of narcotics went into effect, August 1. This law is a good one, although in Switzerland morphin addicts and all others are few compared with those who abuse the use of barbital and similar products. Since this law controls the dispensing of opium, morphin and cocain, it is more than likely that the barbituric compounds will be resorted to. In 1921 the council of health and hospitals of the canton of Vaud issued regulations for the retail sale of drugs, including pharmaceutical specialties. According to Article 5, the refilling of prescriptions containing the substances mentioned is prohibited (1) when the prescription states "not to be repeated"; (2) when the prescription contains the drugs mentioned and does not indicate the doses to be taken, and (3) when there is reason to suspect that a patient abuses the use of these drugs. In these circumstances the pharmacist must notify the attending physician and the chief of the sanitary service. The drugs included in the regulations are chloral, cocain and its salts, ethylmorphin hydrochlorid, heroin, morphin and its salts, all preparations of opium, and lastly the hypnotics.

Cocain, codein, heroin, morphin and opium fall within the federal law, but not the hypnotics, such as barbital. As no specific mention is made of barbituric compounds sold as specialties without a physician's prescription, a pharmacist may, in a strict sense, maintain that he is not violating the law. Hence, if fatal or serious accidents are to be avoided, stricter control of this category of drugs is necessary. To prohibit the use of morphin or cocain to a few drug addicts is very well, but it would be better still to control those who, because of disappointments, seek oblivion by the easy, elegant and discreet means offered by barbituric compounds.

Rudimentary Organs

Professor Weber of the University of Geneva, by his yet unpublished researches in embryology, has come to the conclusion that the anatomic notion of rudimentary organs has become shaken. At one time it was supposed that the ancestors of each species were reflected in the various phases of development of every animal. The acquisition of apparently useless organs, then, was assumed merely to establish the distant family connections of the individual. In place of this historical conception of comparative anatomy and embryology, some biologists have adopted—apparently influenced by physiologic researches—a narrow theory such as is evident in numerous German productions: no organ is totally deprived of its functions; all anatomic structures that cease to be useful disappear unless during phylogenesis they acquire new functions. Those organs which temporarily appear during autogenesis disappear only after having played a morphologic or physiologic part. Briefly put, in certain animals less developed organs are to be found than in others, whose function is doubtful or unknown, but for the finalists there is no rudimentary organ in the strict sense of the term.

Professor Weber brings forward an experimental result which shows that an anatomic structure may persist and grow during the entire course of development, although it may play no part. If, shortly after it has formed, the anterior limb bud of a tadpole is coagulated by heat, the neighboring epithelial cells actively multiply, and within twenty-four hours cover the mass of dead mesodermic cells. The latter are phagocyted by the wandering cells which take their place and at this point constitute an embryonal connective tissue. The bud is thus totally reconstructed in shape, but not in its potentiality, the primary blastema having been completely destroyed by heat. The new bud possesses growth properly belonging to it and forms a little stump without skeleton or muscle, but possesses a more or less differentiated epidermis and dermis, and nerves and blood vessels of its own. Undoubtedly it is in its shape rather than in the nature of its component elements that the causes of its vascularization, innervation and growth are to be sought for in this really rudimentary organ devoid of any function.

Results of Antivaccination Activities

Smallpox has lately returned to Great Britain and Switzerland. In England and Wales, seven cases were reported in 1917, and sixty-three in 1918. In 1919, 1920 and 1921 there were, respectively, 311, 280 and 366. In 1922 the total was 973; it was 2,054 in 1923, and 3,395 in 1924. The increase continues this year, because the first five months gave 3,008 cases. This is the outcome of the antivaccination propaganda carried out in England, which influenced the introduction into the law of a "conscience clause"; so that about 50 per cent. of the children escape vaccination.

In Switzerland, the condition is still more instructive. Smallpox reappeared first in the cantons of Zurich, Glarus and Basle, and, in the next few years, in all the German speaking cantons. In July, 1923, there were 3,900 cases. But during these years all the French speaking cantons and the Italian speaking canton of Tessin reported only a few sporadic cases, such as occur in all countries and never are the starting point of epidemics. Why this condition of affairs? Simply that the federal laws do not require vaccination, and each canton has its own laws. In Switzerland, an antivaccination campaign is going on, quite as energetic as that waged in England; a campaign in which appeal is made to every possible motive, including religious prejudice and individual liberty. In addition there is the all important ignorance of the masses, and a certain amount of dishonesty on the part of the propagandists. Hence, quite a number of the cantons have struck obligatory vaccination off their laws. Smallpox has practically disappeared from all countries where children are regularly vaccinated and reappears in those where this practice has been abandoned. A more brilliant demonstration of the rich results obtained from Jenner's discovery can hardly be conceived.

Intravenous Injection of Sodium Bicarbonate

At a recent meeting of the Academy of Sciences of Paris, Hédon presented a communication of practical interest. A depancreatized dog remained in perfect health and weight for fourteen months with two insulin injections daily and oral ingestion of pancreatic ferments. All functions remained normal. Sexual activity was unimpaired and the dog impregnated a female, which had a litter of four normal pups in October, 1923.

In January, 1924, administration of insulin was stopped, with the result that severe diabetes rapidly ensued and on the sixth day serious symptoms of acidosis developed. Besides sugar, the urine contained albumin, hemoglobin, biliary pigments, casts and fatty granulations. Insulin was then injected daily and, although the glycosuria disappeared, the general health did not improve. On the evening of the seventh day the animal was in deep coma and at the point of death, the alkali reserve having fallen to 11 per cent. Three successive intravenous injections of sodium bicarbonate, 5 gm. in all, marvelously restored him to life, and in the following days large doses of insulin and carbohydrate restored the animal's previous good health. Contrary to opinions recently put forward, Hédon does not believe that prolonged use of insulin has the slightest toxic action on the organs of the animal, and points out that the dog could never have so completely recovered from his comatose state if the viscera, especially the liver, had not been functionally normal.

Marriages

Stanley Henry Mellen, Newark, N. J., to Mrs. Madelyn Crane Friedlein of Bloomfield, N. J., October 3.

Leslie B. Marshall, Lieutenant, U. S. Navy, to Miss Lavinia Strange, both of Minneapolis, in October.

John Van Ess, Newark, N. J., to Miss Louise Chapman Foster of Bethlehem, Pa., in September.

William Bradley Breed, Boston, to Miss Ruth Lombard Williams of Dedham, Mass., recently.

William L. McBrien to Miss Mollie Sturm, both of Staunton, Ill., at Lincoln, October 1.

Max Duffield Miles, Cleveland, to Miss Margaret Bailey of North Scituate, Mass., recently.

Robert Flanders to Miss Mary Parker Straw, both of Manchester, N. H., September 26.

Waldo Neil Graves, Minneapolis, to Miss Evelyn Sheakley of Hampton, Iowa, in October.

Arthur W. Wheeler, Toledo, Ohio, to Miss Myra Murray of Milwaukee, in September.

Harold V. Hyde to Dr. Corinna Rhea Cote, both of Boston, in August.

Deaths

Theodore Chapin Beebe, Paris, France; Medical School of Harvard University, Boston, 1900; formerly instructor of surgery, Tufts College Medical School, Boston; served in the M. C., U. S. Army, during the World War; aged 51; died in October, following an operation.

William Henry Talbott ⊕ Washington, D. C.; University of Maryland School of Medicine, Baltimore, 1904; member of the Medical and Chirurgical Faculty of Maryland; aged 44; died, October 28, at the Union Memorial Hospital, Baltimore.

Alford T. Chatham, Clarkton, Mo.; Hospital Medical College of Evansville, Ind., 1884; member of the Missouri State Medical Association; Civil War veteran; formerly president of the Clarkton National Bank; aged 77; died in October.

Lorenzo L. Webb, Carroll, Tenn.; University of Louisville School of Medicine, 1880; Jefferson Medical College of Philadelphia, 1890; aged 69; died, October 16, at the Crook Sanatorium, Jackson, following a long illness.

Frank Steinke ⊕ Elizabeth, N. J.; College of Physicians and Surgeons, Baltimore, 1910; served in the M. C., U. S. Army, during the World War; aged 42; died suddenly, November 5, of heart disease.

Jesse Rutledge Bell ⊕ Due West, S. C.; Medical College of the State of South Carolina, Charleston, 1899; for many years chairman of the board of education; aged 53; died suddenly, October 22, of heart disease.

Benjamin Franklin Drury, Gouverneur, N. Y.; University of Vermont College of Medicine, Burlington, 1859; member of the Medical Society of the State of New York; aged 89; died, October 22, of senility.

Joseph Osterman Dyer, Galveston, Texas; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1880; aged 69; died, October 2, at St. Mary's Infirmary, of heart disease.

Everard W. E. Paterson ⊕ Grand Rapids, Mich.; Grand Rapids Medical College, 1907; specialized in ophthalmology, otology, laryngology and rhinology; aged 55; died, October 26, following a long illness.

Noble Camp Doss, Orlando, Fla.; Atlanta College of Physicians and Surgeons, 1912; member of the Medical Association of Georgia; aged 41; was killed in a railroad accident, October 27.

William Harlan Packard, Harrisburg, Neb.; Creighton Medical College, Omaha, 1905; aged 46; died, October 22, at the West Nebraska Methodist Episcopal Hospital, Scottsbluff, of pneumonia.

Harry B. Ely, Honesdale, Pa.; Jefferson Medical College of Philadelphia, 1886; member of the Medical Society of the State of Pennsylvania; aged 59; died, October 25, of angina pectoris.

Alfred Alexander Young, Oxford, Miss.; University of Pennsylvania School of Medicine, Philadelphia, 1870; Confederate veteran; aged 78; died, October 21, at San Antonio, Texas.

Charles Clifford Allen, Absecon, N. J.; Hahnemann Medical College of Philadelphia, 1898; member of the Medical Society of New Jersey; aged 50; died, October 26, of lung abscess.

William Walter Crane, Alhambra, Calif.; Medical College of Ohio, Cincinnati, 1875; formerly a practitioner in Illinois; aged 74; died, October 19, in a sanatorium at San Gabriel.

Ruby Kathleen Embry, Abilene, Texas; University of Texas Department of Medicine, Galveston, 1916; member of the State Medical Association of Texas; aged 34; died in October.

Eden Vinson Delphey ⊕ New York; Medical Department of Columbia College, New York, 1889; aged 67; died, October 22, at the Roosevelt Hospital, of cerebral hemorrhage.

G. A. Foster, Liberty, N. C.; Baltimore Medical College, 1891; at one time president of the Bank of Liberty; formerly member of the state legislature; aged 67; died, October 22.

George Ernest Richmond, Denver; Louisville (Ky.) Medical College, 1906; member of the Colorado State Medical Society; aged 45; died, October 23, of heart disease.

MacDonald Moore, San Diego, Calif.; Western Reserve University School of Medicine, Cleveland, 1887; aged 59; died in October, at Key West, Fla., of heart disease.

Samuel B. Bogan, Salem, Ill.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1885; aged 72; died, October 26, of influenza.

Hugh Smith Maxwell ⊕ Lisbon, Ohio; Rush Medical College, Chicago, 1904; served in the M. C., U. S. Army, during the World War; aged 46; died, October 31.

George W. Mallory ⊕ Santa Rosa, Calif.; College of Physicians and Surgeons, San Francisco, 1900; aged 65; died, October 26, of cerebral hemorrhage.

Ellen F. Taft Grimes, Decatur, Ill.; Woman's Medical College of Pennsylvania, Philadelphia, 1876; aged 77; died, November 2, at New York, of pneumonia.

Lawrence Edward B. Rispin, Chicago; Loyola University School of Medicine, Chicago, 1918; aged 42; died, June 5, at Berwyn, Ill., of carcinoma of the liver.

Abraham B. Shekell, Washington, D. C.; Georgetown University School of Medicine, Washington, 1863; Civil War veteran; aged 88; died, October 24.

John Styvesant Hook ⊕ Bentleyville, Pa.; University of Pittsburgh School of Medicine, 1904; aged 43; died, October 26, of aortic aneurysm.

William E. Sanderson ⊕ Altus, Okla.; University of Louisville (Ky.) School of Medicine, 1891; aged 55; died October 20, of cerebral hemorrhage.

Henry Stanton Rowe, Rome, N. Y.; Albany Medical College, 1905; aged 39; died, October 27, at the Oneida County Hospital, of pneumonia.

Ira F. Palmer, Onarga, Ill.; Eclectic Medical Institute, Cincinnati, 1872; Civil War veteran; aged 80; died, October 21, at Rochester, Minn.

Edgar L. Colburn, Los Angeles; Hahnemann Medical College and Hospital, Chicago, 1887; aged 66; died, in October, at Hong Kong, China.

James Ward Wilson, Van Wert, Ohio; Ohio Medical University, Columbus, 1897; aged 60; died, October 31, of cerebral hemorrhage.

William Emmett Burch, Louisville, Ky.; Medical College of Ohio, Cincinnati, 1869; aged 85; died, October 21, following a long illness.

Burr Carloss Minkler, Des Moines, Iowa; Bennett College of Eclectic Medicine and Surgery, Chicago, 1894; aged 70, died, October 30.

Alexander M. Cheney, Jerseyville, Ill.; Gross Medical College, Denver, 1895; aged 57; died, October 28, of cerebral hemorrhage.

William Thomas Sutcliff, Los Angeles; Rush Medical College, Chicago, 1894; aged 58; died, October 29, of cerebral hemorrhage.

Jasper G. Sutton, Rushsylvania, Ohio; Eclectic Medical Institute, Cincinnati, 1886; aged 72; died, October 21, at Ansonia.

Theodore E. Walker, Rantoul, Ill.; Medical College of Indiana, Indianapolis, 1880; aged 80; died, October 24, of senility.

John H. Bruce, Eaton, Ohio; Medical College of Ohio, Cincinnati, 1869; Civil War veteran; aged 85; died, October 28.

William Frank Glenn, Nashville, Tenn.; University of Nashville Medical Department, 1873; aged 71; died, October 20.

Perry Tecumseh Nixdorf, St. Elizabeth, Mo.; Missouri Medical College, St. Louis, 1885; aged 67; died, October 21.

George Edward Stuart, Oregon City, Ore.; Independent Medical College, Chicago, 1890; aged 74; died, October 24.

Sarah E. Conner, Los Angeles; University of Michigan Medical School, Ann Arbor, 1896; aged 62; died, October 27.

Augustus B. Colvin, Quitman, Ga.; Atlanta College of Physicians and Surgeons, 1909; aged 56; died, August 26.

Charles A. Williamson, Columbus, Texas (licensed, Texas, under the Act of 1907); aged 76; died, October 23.

Edgar Franklin Gaines, Independence, Mo.; Kansas City Medical College, 1898; aged 54; died, October 15.

Milton Alvah Fair, Baltimore; Southern Homeopathic Medical College, 1895; aged 52; died, October 23.

Archibald Walter Robertson, Lathrop, Mo.; St. Louis Medical College, 1871; aged 79; died, October 22.

J. A. Sanderlin, Bryant, Ark. (licensed, Arkansas, 1903); aged 71; died, October 24, at Little Rock.

Charles Samuel Grabin, Spencer, Iowa; Lincoln Medical College, 1902; aged 57; died, October 23.

Earl D. Fuller ⊕ Utica, N. Y.; Albany Medical College, 1878; aged 71; died, October 27.

The Propaganda for Reform

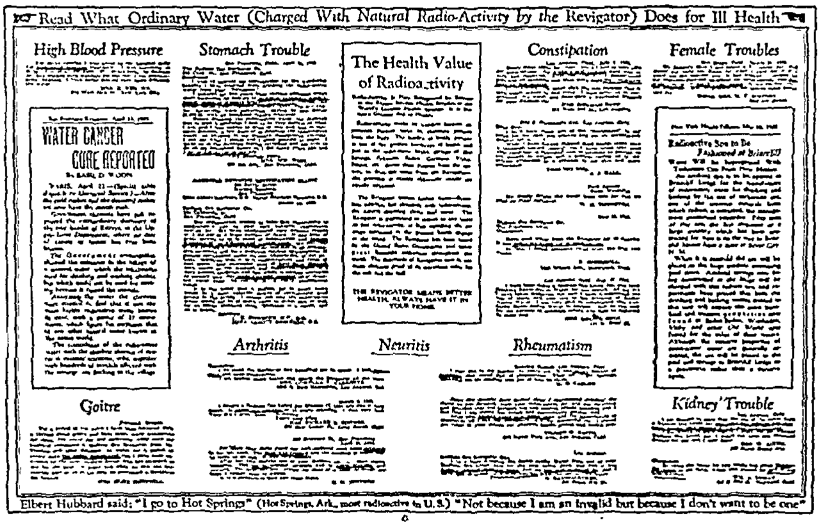
In This Department Appear Reports of The Journal's Bureau of Investigation, of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other General Material of an Informative Nature

RADIUM ORE REVIGATOR

Capitalizing the Public's Ignorance of Radium and Radioactivity

Quackery is nothing if not versatile. Hardly has a new therapeutic agent been brought to the attention of the public through scientific channels before quacks and empirics are heralding from the housetops the claim that they are employing this agency and producing unheard of results. With the discovery of radium and the equally important discovery of its action on the human body in disease, it was but a short time before radium became a by-word for quacks to juggle with.

At first the work was crude, as evidence the case of "Rupert Wells," the cancer-cure quack of St. Louis, who sold a weak, acidulated solution of quinin under the claim that it was a "radium impregnated fluid." In his day Rupert Wells—whose real name was Dennis Dupuis—cut a wide swath, cleaning up about $70,000 a year with his quackery, which a hard-hearted government finally put out of business. Today such crude work would fail; the public is wiser. But quackery, being versatile, adapts itself to the changed conditions and now the bait is cast with greater subtlety, the technique is more finished, the story more plausible. Yet there must be 57 varieties of quackery based on the public's ignorance of radium and radioactivity.



Read What Ordinary Water (Charged With Natural Radio-Activity by the Revigator) Does for Ill Health

High Blood Pressure

WATER CANCER CURE REPORTED

Stomach Trouble

The Health Value of Radioactivity

THE REVIGATOR MEANS BETTER HEALTH. ALWAYS HAVE IT IN YOUR HOME.

Constipation

Female Troubles

Arthritis

Neuritis

Rheumatism

Goitre

Kidney Trouble

Elbert Hubbard said: "I go to Hot Springs" (Hot Springs, Ark., most radioactive in U.S.) "Not because I am an invalid but because I don't want to be one"

Photographic reproduction, greatly reduced (the original measured 11 by 17 inches), of one of the numerous pieces of advertising sent out by the Revigator concern. Note the indirect recommendations (by the testimonial route) of the Revigator for various pathologic conditions, such as "Female Trouble." "Kidney Trouble," "Stomach Trouble," etc. Note also the the attempt to convey the impression that radioactive water is a cure for cancer.

A huge traffic has been developed during the past four or five years in the sale of so-called radioactive pads, consisting of a few cents' worth of crude ore having a low grade of radioactivity and possessing no more therapeutic value than do the luminous figures on the dial of a two-dollar watch.

Still more recently a new scheme has been developed: that of selling water jars containing, either as a part of the walls of the jar or as an accessory to the jar, some low-grade radioactive ore. These jars are sold under the general claim that they render water that is put into them radioactive and that this radioactive water will make you well if you are sick and keep you from getting sick if you are well.

"TIRED" DRINKING WATER

One of the most widely and extensively advertised of these devices is known as the "Radium Ore Revigator," put out by a California company. As is commonly the case with latter-day pseudo-medicine having large financial resources behind it, the Revigator concern puts forward an hypothesis for which there is no foundation and proceeds to build its claims upon it. The thesis in this case is that the drinking water of today has a "basic fault." It is "denatured"; more than that, it is "tired or wilted water." If we are to believe the Revigator concern, the water that one hundred and nine million out of the hundred and ten million people of the United States drink is woefully lacking in an essential element. To quote from the Revigator advertising: "More illness is caused by improper water than any other reason and largely because radioactivity is lost from our daily supply of drinking water." Hence the Radium Ore Revigator to the rescue!

> "By the patented composition of highly selected and scientifically compounded radium ores of which the Revigator is made, this lost element is perpetually restored to all drinking water placed therein."

The public is told, further, that the tired, wilted, denatured water that they are drinking lacks the "vigor gas" and the "vigor element," which "is just as necessary a part of water as hydrogen or oxygen." The Revigator "revigorates or restores natural vigor to drinking water."

From a commercial standpoint such a thesis as this would not in itself be very profitable. The public, very rightly, is not greatly worried about the lack of radioactivity in its ordinary drinking water. While, of course, possibly everything has some degree of radioactivity, practically all drinking water, whether from rivers, lakes, springs or wells, is so low in radioactivity that this factor not only has no therapeutic significance, but only by the most refined scientific methods can its presence be determined. The declaration of the Revigator concern that the drinking water one gets from the faucet has lost its radioactivity from flowing through the pipes, is utter buncombe, for it has virtually no radioactivity to lose. Even in the case of those natural springs which have a measurable degree of radioactivity, there is no acceptable evidence to show that their therapeutic virtues, if any, are in any way dependent on the radioactive factor.

TESTIMONIALS—CLAIMS BY INDIRECTION

But to make a financial success of a device like the Revigator, it is necessary to use "patent medicine" bait if the public is to bite. The exploiters of the Revigator have adopted these methods skilfully. Like Lydia Pinkham, instead of making definite claims for the product they have to sell, they allow gullible purchasers to make the claims for them. They are much too shrewd to say that water from the Revigator will cure cancer. Instead they publish a testimonial from a San Francisco woman who says that she had suffered for five years from cancerous growth and various other troubles, began drinking water from the Revigator and now reports that she never felt better in her life. They do not claim that their vigor water will cure "blood poison"—nothing so crude. But they publish a testimonial of Mrs. S. who declares that "it cured blood poison" for her twelve-year-old daughter and "worked a miracle" on her eighteen-year-old daughter who suffered from "female trouble." Too clever—or too cautious—to say boldly that the Revigator will cure varicose veins or neuritis, they publish a letter from Mr. B. of Los Angeles who reports: "Has greatly reduced varicose veins just as you said it would do; and I have also obtained relief from neuritis."

CURING STOMACH ULCERS, BRIGHT'S DISEASE AND GOITER

It would never do to declare that Revigator water will cure duodenal and stomach ulcers, but it is perfectly proper to publish a testimonial under the heading "Stomach Trouble" from Mr. C., who declares that he had "been a great sufferer from ulcers of the duodenum and stomach" for many years until he used the Revigator water; now he can "eat anything in reason without any trouble."

Have you constipation, cystitis or nephritis? You will be interested in the testimonial of Mrs. D. who used to suffer from constipation and whose kidneys and bladder were also in bad condition until she used the Revigator. Now all her complaints have disappeared. Under "Bright's Disease" we learn that Mrs. S. "had all sorts of troubles—bronchial cough, kidney trouble, rheumatism, sleeplessness, etc.," but since using the Revigator she is perfectly free from pains and troubles of every sort. Mr. A. reports that he has been cured of very serious kidney and liver troubles by the Revigator, while Mr. H. recommends the device for all who have stomach, kidney and bowel trouble, for he "gained forty pounds in one year." Do you live in the goiter district? Read the testimonial under "Goiter." Mrs. H. of Portland, Oregon, had been troubled with a goiter for ten years; she used the Revigator and in "ninety days the goiter disappeared." Mr. B. of San Francisco had arthritis and a crooked knee. He used the Revigator and "the cure seems complete" and the leg "is again straight."

OSTEOPATHIC AND CHIROPRACTIC EVIDENCE

Have you a patient with an hour-glass stomach? The Robinson-Downing Osteopathic Clinic of San Francisco tells of the marvelous results obtained by the use of the Revigator in a case of hour-glass stomach with gastric and duodenal ulcers—"really phenomenal result!" No less fulsome is the testimony of "Dr. Donald Donovan" of Los Angeles. The puff of Donovan, who, by the way, is a chiropractor, deserves reproduction in full:

> "Your Radium Charging Jar can be appropriately called 'The Jar of Life,' as water placed therein becomes infused with the higher vibrations, and constitutes a rational and perfect method to retain and regain health and prolong life This water destroys uric acid, softens and dissolves impurities in the arteries, creates red blood, better secretions of the glands and assists all excretory functions of all the organs of the body, from liver, kidneys to skin. You will find this water to be a natural tonic, producing pep, renewed vigor and a desire to be doing things, suitable for old and young and especially for invalids and children."

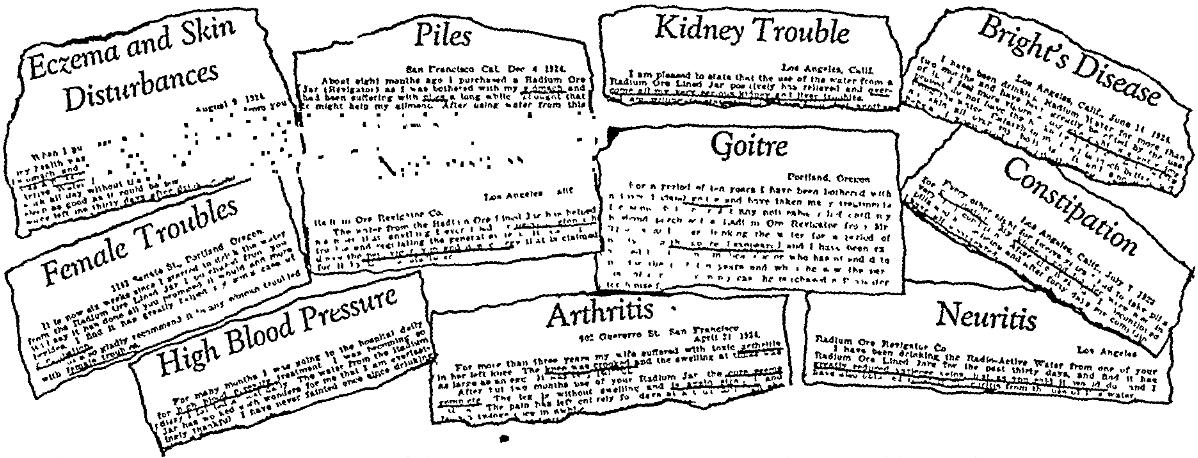
Verily, the Revigator is almost as potent as a chiropractic adjustment! Then there is the testimonial of Mr. C. of the Los Angeles *Evening Herald*, reporting that the Revigator "cured mother of lumbago, also cured dad of rheumatism" Mr. S., who has spent over thirty years in a wheel chair, feels that he is "slowly but surely and permanently getting well." Mr. W. of San Francisco has had "heart trouble" for several years; he used the Revigator and his heart is "nearly back to normal."

No, the modern exploiter of cures does not need to make any claims direct. Such claims can all be made much more plausibly and safely by implication and indirection. One of the pieces of Revigator advertising made up mainly of testimonials arranged under such headings as "Female Trouble," "Arthritis," "Kidney Trouble," "Piles," etc., reproduces an item from a San Francisco newspaper headed in letters nearly half an inch high: "WATER CANCER CURE REPORTED." The story is to the effect that it has been discovered that in a little town in France no one ever has cancer or dies of that fearful disease. Curiously enough, every one in this little town drinks water from a highly radioactive spring! Of course, the exploiters of the Revigator are not claiming that water from the Revigator will cure cancer. Not at all. They merely let the poor sufferer from this disease, grasping at straws, draw his own conclusions from the juxtaposition that they present.

FOR THE SEXUAL NEURASTHENIC

Nor is the Revigator exploited directly for sexual impotency, glandular deficiency or rejuvenation. In fact the direct claim is carefully avoided. That would smack too strongly of the "lost manhood" cures. But scattered through the booklets and leaflets issued by the Revigator exploiters the sexual neurasthenic will find what he seeks. The Revigator advertising does, it is true, state directly that its "vigor" water "has a revitalizing effect" and is reported to have given "best results" in such conditions as "Lack of Energy" and "Run Down Feeling." The company has also stressed, by means of black-face type on the front cover of one of its leaflets:

> "The fountain of youth at last! Ponce de Leon started the quest. It is now finished."


Eczema and Skin Disturbances
Piles
Kidney Trouble
Bright's Disease
Goitre
Constipation
Female Troubles
High Blood Pressure
Arthritis
Neuritis

Here are reproduced in miniature some of the numerous testimonials that form part of the advertising paraphernalia of the Revigator exploitation. The obvious implication is that the Revigator will cure the various conditions listed.

The chief advertising booklet of the Revigator lists "sexual debility" among other conditions which medical authorities are alleged to have claimed can be cured or benefited by the use of "radioactive water in various strengths." While not directly recommending the Revigator for sexual impotency and glandular deficiencies, they mention that radium emanation "increases sexual activity" and "stimulates . . . the entire glandular system"—and allow the sexual neurasthenic to draw his own conclusions.

Nor are indirect and inferential curative claims all that are made by the exploiters of the Revigator. By indirection, also, the public is led to believe that the Revigator will sterilize contaminated water put into it. Thus in their chapter on "Answers to Questions Frequently Asked":

> "*Q.*—Does it kill germs in water?"
>
> "*A.*—Radium Rays destroy many germs according to authorities, but the real function of the Revigator is that it tends to render the body immune to germs by increasing power of resistance."

CAPITALIZING THE U. S. GOVERNMENT

Then, too, the weight of governmental authority is invoked throughout the Revigator advertising. The impression is repeatedly conveyed, without the statement being definitely made, that the United States government holds that the therapeutic value of certain natural springs is due to their radioactivity. The government, of course, has made no such claim. The public is further told that the "apparatus has been tested by the U. S. Government at our request." The basis for this claim seems to be that the concern had the Bureau of Standards test the radioactivity of water that had stood in a specimen Revigator jar a varying number of hours. These tests were made some time ago at a time when the Bureau of Standards would test weakly radioactive material. They were made, of course, on one or two individual jars, and there is no assurance, except that given by the Revigator concern, that the jars that they are furnishing today have even the radioactivity of the specimen jar or jars tested by the *Bureau of Standards. Even if they have, it means nothing* as the amount of emanation given off by the Revigator is so small as to have not the slightest therapeutic significance.

A radium emanation generator that will yield 2,000 millimicrocuries of emanation (or over) during each twenty-four hours may have some therapeutic value in a limited class of cases. Based on this, the Council on Pharmacy and Chemistry has set as its minimum standard for such radium emanation generators 2,000 millimicrocuries of emanation. What does the Revigator yield? Even accepting at their face value the claims of the exploiters, the amount of emanation one gets when the jar is used according to directions is probably less than ten and certainly considerably less than twenty millimicrocuries every twenty-four hours. Put in another way: in order to obtain the quantity of emanation which would be considered the minimum adequate dose, it would be necessary for the patient to consume the contents of from sixty to one hundred and twenty Revigator jars of water (120 to 240 gallons) each twenty-four hours!

Correspondence

"EXOPHTHALMIC GOITER AND THE INVOLUNTARY NERVOUS SYSTEM"

To the Editor:—The frequent communications to the literature on exophthalmic goiter by Lieb, Kessel and Hyman have been a challenge not only to the surgeon but also to the internist. The article in their series in The Journal, October 3, should not pass unanswered.

Just as people have become educated against a policy of watchful waiting in acute appendicitis, so are they learning that an attitude of skilful neglect is dangerous in exophthalmic goiter. Patients who have suffered serious and permanent damage to the cardiorenal-vascular system because *they have been subjected to such treatment* are in a class today with those who suffer a ruptured appendix. In 95 per cent. of our cases of thyroidectomy for exophthalmic goiter the average period of hospitalization was six days. Convalescence was not longer than three weeks after leaving the hospital. Our experience, I am sure, does not differ from that of several other internists and surgeons who endeavor to curtail the damage inflicted on the cardiovascular-renal system and restore the patient to normal health. No stage operations have been performed for the last year and a half.

The discovery by Plummer of the efficacy of iodin as an aid to the surgical cure of exophthalmic goiter has eliminated all but one obstacle to the successful treatment of this condition. The surgical mortality, which previously compared favorably with that of abdominal operations, has now been still further reduced. The one great danger, postoperative hypothyroidism, is eliminated by the proper treatment. The only patients who offer a real problem are those who have been allowed to go for six months or a year and to pass through one or more crises and periods of remission.

Kessel and Hyman have stated that the only drug administered was syrup of ferrous iodid, given to reduce the neck circumference. In the light of Plummer's discovery, it is evident that the iodin exerted a more important influence than had been supposed. I have shown that even in cases treated for long periods with iodin, hyperthyroidism persists and is merely temporarily disguised. Kessel and Hyman say also that no reliable data have been advanced to show that adenomas can become toxic. In 1924 I reported a series of eighteen cases of iodin hyperthyroidism induced by the indiscriminate use of iodin in adenomatous goiters. A recent communication in the *American Journal of the Medical Sciences* contains a further report of thirty-eight cases. If I may judge correctly from their deductions, no attempt is made to separate the two distinct clinical entities known as exophthalmic goiter and adenoma with hyperthyroidism as established by Plummer in 1913, and now almost generally accepted.

The theory advanced that certain persons with an "autonomic imbalance" are predisposed to exophthalmic goiter is debatable. When one sees perfectly healthy farmer boys and girls suddenly develop exophthalmic goiter, one is inclined to believe that the unstableness of their nervous systems is rather the result of and not a factor in the disturbance of the thyroid. A survey of our records during the last three years shows that a history of "psychic trauma" preceding the symptoms of exophthalmic goiter has been unusual.

The authors have stated that basal metabolism is unquestionably the best objective index of the progress of the disease. They admit that following operation there is usually an immediate and definite fall in the basal metabolic rate, and yet they do not believe that thyroidectomy is truly specific. They write, "It is reasonable that a fall in the basal metabolic rate should follow thyroidectomy in patients with exophthalmic goiter as well as in normal persons." This is not clear. Certainly the basal metabolic rate in normal persons would be normal and there would be no indication for thyroidectomy. Attention is called to the residua that may persist after operation. It may be reiterated that such residua persist only in cases that have been skilfully neglected. In our experience the surgical mortality has been less than that for any other surgical operation of equal magnitude.

Arnold S. Jackson, M.D., Madison, Wis.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

HERRADORA PRODUCTS AND INTRAVENOUS THERAPY

To the Editor.—I am enclosing literature and formulas for the treatment of high blood pressure, rheumatism, anemia, pulmonary tuberculosis, rickets, gastric disturbances and the menopause submitted to me by a detail man of the Scientific Drug Company, who claimed to be both a pharmacist and a physician. The advertising advocates the efficacy of intravenous and intramuscular treatment of these diseases. The firm offers the ampules without payment until results are found to be satisfactory and as claimed. The representative presented letters signed by various New York physicians commenting favorably on the Herradora products.

Will you comment again on this buncombe of intravenous and intramuscular treatment as advocated by Herradora? Please omit my name.

J. D. V., New York.

Answer.—The Council found the intravenous preparations of the Scientific Chemical Company (Marcus Aurelio Herradora, president) unacceptable for New and Nonofficial Remedies because of unwarranted and unsubstantiated statements in favor of intravenous and intramuscular administration of drugs, and because of the complex and indefinite mixtures of drugs represented by these specialties (Herradora

Specialties Not Acceptable for N. N. R., The Journal, April 28, 1923, p. 1259).

A comparison of recent advertising with that issued by this firm at the time of the Council's rejection shows that it still exploits in much the same way the same line of products then found unacceptable. In the circulars nothing is said of the dangers of intravenous medication, and its routine use is advocated in a wide variety of conditions, ranging from gastric disturbances to pulmonary tuberculosis. Over the formula for each preparation is placed the caption, "For Intravenous Use," with the exception of the three recommended for rickets, which are captioned, "Intravenous or Intramuscular." The circular claims that "the Herradora solutions . . . may be administered either intravenously or intramuscularly"; but by far the greater prominence is given to the intravenous route. Certain formulas still contain the ambiguous and indefinite ingredient, "Arsenic-organic compound, sodium of dimethylarsenate type," which may or may not be a mystic name for sodium cacodylate. Several of the formulas contain sodium hypophosphite, which has been shown to be devoid of any therapeutic value in the treatment of any disease.

The absurd and obsolete polypharmacy characteristic of the earlier Herradora advertising still persists. In one of the present circulars, three "Compounds," containing nine drugs, are indicated for treatment of "Anemia with Nervous Symptoms," and three "Compounds," containing ten drugs, for "Anemia with Gastric Symptoms" For pulmonary tuberculosis the firm recommends three series of "Compounds," each series consisting of three separate formulas and each formula containing from four to six drugs!

There appears to be every reason, therefore, to reiterate the Council's conclusion that "the propaganda contained in the advertising matter issued by the Scientific Chemical Company is detrimental to the rational practice of medicine and to the public health."

RABIES

To the Editor —I am much interested in the control of rabies I note on page 1252 of The Journal, October 17, that you quote Withington and Bigelow as being of the opinion that it is practical to require inoculation as a prerequisite to licensing dogs. I attempted to do this some three years ago in this city but the concensus of opinion seemed to be that the method of inoculation had not been well enough perfected to consider that it offered sufficient immunity. Who are Withington and Bigelow? Please let me have their address, also who is responsible for the New Jersey law? Is it under the direction of the state board of health or the state livestock sanitary commission?

A. H Flickwir, M D, Houston, Texas

Answer—The addresses of the authors of the article entitled "The Milton Experience with the Antirabies Inoculation of Dogs," are as follows·

Withington, Paul R, M D, Harvard Chairman, Milton Board of Health; Visiting Physician, Milton Hospital, Milton, Mass

Bigelow, George H., M D: Dr P H, Harvard, State Commissioner of Public Health, Massachusetts State Department of Health, Boston.

So far as we have been able to determine, New Jersey has not enacted any law on the subject; the *Public Health News* for New Jersey, May-June, 1925, states that a bill providing for the inoculation of dogs failed to pass the legislature but that ordinances providing for compulsory inoculation of dogs have been adopted by a few municipalities in the state; so far as it has been possible to ascertain, these ordinances have been adopted by health authorities rather than by state live stock authorities. Controlling rabies by means of inoculation of dogs as a practicable public health measure must be considered as in the experimental stage

DETERMINATION OF B COLI FROM FROGS

To the Editor —In The Journal, October 10, in reply to an inquiry of Dr Mjedloff regarding the determination of *B coli* in water, you deal at length with the problem of distinction between members of the colon group of fecal and nonfecal origin Your answer does not, however, include any reference to Dr Mjedloff's specific question Are any methods known to differentiate between the human *B coli* and that of the frog? It is generally easy to carry out this differentiation by simply testing the organisms in question for their ability to ferment sugars at 46 C As a rule, *B coli* from the intestines of warm blooded animals gives a positive Eijkman test (fermentation of dextrose at 46 C), while *B. coli* from feces of frogs and other cold blooded animals fails to give this reaction and ferment sugars only at 37 C More information on this subject, which evidently is not only of academic interest but of great significance in passing on the nature of the water pollution, may be found in a paper which I published four years ago in the *Centralblatt fur Bakteriologie*, Orig **87**: 63, 1921-1922

Claus W Jungeblut, M D, Albany, N Y.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

Arizona· Phoenix, Jan 5-6. Sec, Dr. W. O. Sweek, 404 Heard Bldg, Phoenix

Colorado· Denver, Jan 5. Sec., Dr David A Strickler, 612 Empire Bldg, Denver

Delaware Wilmington, Dec. 8 9 10 Pres. Med Coun, Dr. Henry W Briggs, 1026 Jackson St, Wilmington

Kentucky. Louisville, Dec. 8 10 Sec, Dr. A T. McCormack, 532 W. Main St, Louisville

Louisiana New Orleans, Dec 10 12 Sec, Dr Roy B Harrison, 1507 Hibernia Bank Bldg, New Orleans

Maryland· Baltimore, Dec 8 11 Sec, Reg Bd, Dr Henry M. Fitzhugh, 1211 Cathedral St, Baltimore, Sec, Homeo Bd, Dr J S. Garrison, 517 Old Orchard Rd, Baltimore

Minnesota Minneapolis, Jan. 5-7. Sec., Dr Thomas S. McDavitt, 734 Lowry Bldg, St. Paul

North Carolina Raleigh, Nov 25 (Endorsement of Credentials only). Sec, Dr Kemp P B Bonner, Morehead City.

North Dakota Grand Forks, Jan 5 Sec, Dr George M Williamson, Grand Forks

Ohio: Columbus, Dec. 2 4. Sec, Dr H M. Platter, Hartman Hotel Bldg, Columbus.

Oregon: Portland, Jan 5 7 Sec, Dr N C. Coe, 1208 Stevens Bldg, Portland.

Rhode Island: Providence, Jan 7. Sec, Dr. Byron U Richards, State House, Providence

Utah Salt Lake City, Jan 5 Director of Reg, Mr J T Hammond, 412 State Capitol Bldg., Salt Lake City.

Virginia Richmond, Dec 8 11 Sec, Dr. J W Preston, 720 Shenandoah Life Bldg, Roanoke

Wisconsin Milwaukee, *Basic Sciences*, Dec. 18-19. Sec, M. F. Guyer, Madison

Nebraska June Examination

Mr. Lincoln Frost, secretary of the Nebraska Department of Public Welfare, Bureau of Examining Boards, reports the written examination held at Omaha, June 8-10, 1925 The examination covered 10 subjects and included 90 questions. An average of 70 per cent. was required to pass. Of the 118 candidates examined 116 passed, 2 failed. Four candidates were licensed by reciprocity. The following colleges were represented

College	PASSED	Year Grad	Per Cent.
Creighton Medical College		(1924)	85.6
		(1925)	80.7, 81.1, 81.2, 81.4, 81.5, 82.1, 82.2, 82.2, 82.4, 82.4, 82.5, 82.6, 82.8, 83.3, 83.5, 83.6, 83.6, 83.7, 83.9, 83.9, 84.1, 84.2, 84.3, 84.4, 84.6, 85, 85.2, 86.1, 86.4, 86.6, 89.3
University of Nebraska College of Medicine		(1925)	80.9, 81.5, 82.3, 82.4, 82.4, 82.5, 82.5, 82.6, 82.8, 82.9, 82.9, 83.1, 83.1, 83.2, 83.3, 83.4, 83.7, 83.7, 83.7, 83.8, 83.9, 84.1, 84.1, 84.3, 84.4, 84.4, 84.4, 84.5, 84.6, 84.6, 84.6, 84.7, 84.7, 84.7, 84.7, 84.8, 84.8, 84.9, 84.9, 84.9, 85, 85, 85.1, 85.1, 85.2, 85.3, 85.5, 85.6, 85.7, 85.7, 86, 86.2, 86.2, 86.3, 86.4, 86.4, 86.6, 86.6, 86.7, 86.7, 86.8, 86.9, 86.9, 86.9, 86.9, 86.9, 87, 87.1, 87.1, 87.1, 87.3, 87.4, 87.6, 87.6, 87.7, 87.7, 87.8, 87.8, 88, 88.2, 88.2, 90.1, 94
Long Island College Hospital		(1925)	81.7

College	FAILED	Year Grad	Per Cent.
Creighton Medical College		(1925)	79.8*
University of Bonn, Germany		(1924)†	‡

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Northwestern University Medical School		(1924, 2)	Illinois
State University of Iowa College of Medicine		(1920)	Iowa
University of Louisville School of Medicine		(1913)	Kansas

* Fell below 70 per cent in one subject
† Graduation not verified by the American Medical Association.
‡ No grade given

Rhode Island April Examination

Dr Byron U Richards, secretary of the Board of Health of Rhode Island, reports the written and practical examination held at Providence, April 2-3, 1925. The examination covered 7 subjects and included 70 questions. An average of 80 per cent was required to pass Of the 7 candidates examined, 6 passed and 1 failed. The following colleges were represented.

College	PASSED	Year Grad.	Per Cent
Harvard University		(1921)	91.5
		(1925)	91.6
Tufts College Medical School		(1904)	94
		(1924)	93
Western Pennsylvania Medical College		(1902)	96
Woman's Medical College of Pennsylvania		(1908)	92

College	FAILED	Year Grad.	Per Cent
University of Naples, Italy		(1922)*	77.2

* Graduation not verified by the American Medical Association.

Book Notices

Tissue Culture. Studies in Experimental Morphology and General Physiology of Tissue Cells in Vitro. By Albert Fischer, M.D. With an Introduction by Alexis Carrel, L.B., B.S., M.D., Member of the Rockefeller Institute, New York. Paper. Pp. 310, with 71 illustrations. Copenhagen: Levin & Munksgaard, 1925.

This treatise on tissue culture will be more than welcome to the host of followers of this important method of investigating many of the fundamental problems in physiology and pathology. It is in reality the first attempt to summarize the more important advances made in this field of scientific endeavor, which had its beginning in that pioneer experiment of Dr. R. G. Harrison on the regeneration of the nerves of frog embryos cultivated in frog's lymph. From that time to the present, important advances have been made. Most of these are described briefly and clearly by the author. Especial emphasis is placed on the brilliant work of Dr. Alexis Carrel of the Rockefeller Institute, to whom we are indebted for the development of the essential methods for cultivating tissues indefinitely. It was by these essential methods that Dr. Carrel established the first strain of tissue cells in vitro, a strain of chick fibroblasts now fifteen years old. The major part of the book, however, deals with the author's own researches, which are not kept separately, but added to the chapters to which they belong, in order not to break up the continuity. These researches deal with the more physiologic phase of the tissue culture method. They were begun during Dr. Fischer's stay at the Rockefeller Institute, while working in Dr. Carrel's laboratory, and continued at the Institute for General Pathology at the University of Copenhagen. Researches on tissue culture have not, however, been primarily along the same line as the author's researches, nor has there been agreement in interpreting the results obtained by this and other methods. It is important, therefore, that some distinction be made between the different applications of the tissue culture methods that have been used by various workers. Fischer brings out very clearly the fact that these workers should be looked on as belonging to one of two separate groups: those concerned primarily with the method as a means of studying the cytology of living surviving tissue cells kept in a protective medium, and those concerned primarily with the propagation of living tissue cells kept in a nourishing medium by continued cultivation. The book describes in detail the researches done along the latter line. It does not, however, give as complete an account of the more cytologic use of the method of tissue culture, so as to make it a more complete textbook. Nevertheless, it is the most valuable book that we have had on this subject thus far, for it has a complete index and a bibliography of more than 500 references. Workers in this field are few. This book, no doubt, will attract many of those who read it to actual research, because of the practical applications of this method in many lines of research in physiology and pathology.

Les principales positions utilisées en radiographie. (Technique, indications, résultats). Par Le Dr. L. Delherm, Chef du service d'electro-radiologie de l'Hôpital de la pitié, et Le Dr. Morel Kahn, Assistant du service d'electro-radiologie de l'Hôpital de la pitié. Paper. Price, 25 francs. Pp. 252, with 134 illustrations. Paris: A. Maloine & Fils, 1925.

The authors state in the preface that the work is composed of three parts: (1) a brief and purely technical description of the position in which the patient is to be placed, the precautions to be taken, the information likely to be obtained, and the conditions indicating its use; (2) a photographic reproduction of a subject placed in the position described, and (3) the resulting roentgenogram. They add that this practical information has never before been presented in this form in French. It has certainly never been published in this form in English, and we have not seen a similar work published in any other language. The plan of the work has been admirably carried out in every particular, and the photographic and roentgenographic reproductions are so clear and comprehensive that even without the assistance of the text no trouble should be experienced in duplicating the results shown. This makes the work of almost as much value to those who cannot read French as it is to those who do. Of especial interest and value are the lateral views of the hip, shoulder, inferior maxilla and cervical spine, including the seventh cervical; posterior-anterior views of the shoulder girdle and sternum, and the anterior-posterior views of the atlas-axis articulation, os calcis, and knee ankylosed in flexion. The book will prove of great assistance to the younger roentgenologist and to the technician, and should have a place in every roentgen-ray laboratory as a reliable and ready guide to correct technic.

Experimentelle Physiologie und Pathologie der Verdauung (Chymologie). Von Prof. Dr. E. S. London. Paper. Price, 9 marks. Pp. 197, with 16 illustrations. Berlin: Urban & Schwarzenberg, 1925.

This represents a series of thirty lectures given before university or college audiences in Russia. There are no references to the literature and no index. The author is a pupil of Pawlow, in whose laboratory he has worked. He states that the book is based on many years' personal experience in laboratory investigation. The book gives abundant evidence of such experience on the part of the author. London has endeavored to outline in nontechnical terms the problems in digestion that have been solved by experimental methods, and the problems that still remain for solution. In many of the chapters the author shows a lack of familiarity with recent important literature. For example, he states without question or qualification that acids in the stomach open the pyloric sphincter. He also states that the effects of total extirpation of the duodenum demonstrate conclusively that the duodenum produces an important internal secretion, which, among other things, stimulates the pancreas. The successful total extirpation of the duodenum reported by several American investigators a few years ago gave no support to this view. The author apparently is also not familiar with the recent work on the chemical phases of gastric secretion by Dr. Ivy and his co-workers in this country. In the last chapter, he outlines interesting effects on gastric motility and secretion by experimental anemia. In dogs, the loss of one third of the total blood produces immediate motor and secretory paralysis in the stomach. The dog eats, but gastric digestion is greatly delayed—by three or four times the normal. Motor activity recovers sooner than secretory activity, and in the process of recovery, hypermotility and hypersecretion are produced before there is finally a return to the normal. The book, as the author states, is neither a textbook nor a reference book. He offers it simply as a guide. As such it is valuable and useful. He would have made a greater appeal to physiologists and clinicians in this country if the literature had been cited and a more critical analysis of the problems had been carried out.

Eye, Ear, Nose and Throat Manual for Nurses. By Roy H. Parkinson, M.D., Visiting Oculist and Aurist to St. Joseph's Hospital, San Francisco. Cloth. Price, $2.25. Pp. 207, with 51 illustrations. St. Louis: C. V. Mosby Company, 1925.

This sets out to give a concise, clear statement of the simpler facts regarding the diseases of the eye, ear, nose and throat, an object which it accomplishes well. The treatise makes intelligible to the laity, so far as this is possible, facts regarding these regions. The book will be useful in training schools for nurses, since ordinary textbooks on these subjects, even the shorter ones, deal more with diagnosis and treatment from the standpoint of the physician and take a nurse too far afield from her own profession.

Bone Sarcoma. An Interpretation of the Nomenclature used by the Committee on the Registry of Bone Sarcoma of the American College of Surgeons. By E. A. Codman, M.D., Registrar. Cloth. Price, $2. Pp. 93, with 19 illustrations. New York: Paul B. Hoeber, Inc., 1925.

This little book contains a statement of the nomenclature used by the Committee on the Registry of Bone Sarcoma of the American College of Surgeons. The committee was organized to try the experiment of a cooperative investigation by surgeons, roentgenologists and pathologists to clear up the difficulties concerning the diagnosis and treatment of these tumors. Histories, roentgenograms and histologic preparations of bone sarcomas are solicited for collaborative study, interpretation, recording and filing, with the end that enough material shall be accumulated to improve our knowledge of bone sarcomas, which are so infrequent that few surgeons see enough cases to get a clear view of the whole group. A provisional classification has been adopted for the bone tumors as follows: metastatic tumors of the bone, periosteal fibrosarcoma, osteogenic tumors (benign and malignant), inflammatory conditions, benign giant cell tumor, angioma (benign and malignant), Ewing's tumor, myeloma. It is to be hoped that this experiment in cooperation will be successful enough to justify similar cooperative investigations.

Wesen und Vorgang der Suggestion. Von Dr. Erwin Straus. Abhandlungen aus der Neurologie, Psychiatrie, Psychologie und ihren Grenzgebieten. Beihefte zur Monatsschrift für Psychiatrie und Neurologie, Herausgegeben von K. Bonhoeffer. Heft 28. Paper. Price, 4 gold marks. Pp. 86. Berlin: S. Karger, 1925.

Straus analyzes suggestion through detailed study of ordinary conversation in contrast with hypnosis. Previously, he believes, theories of suggestion were erroneously influenced by studies of the hypnotic state in which the subject's behavior is regarded as a state of pure receptivity due to a "specific psychic constellation in the subject caused by affective influences on the part of the suggestor." Such a theory might account for affirmation and acceptance; it fails to explain *repudiation and negation*. It involves also the erroneous idea that in the suggestive act the subject has no purpose, "no subjective motivation," and is controlled by causes outside of its consciousness (extraconscious causation). For Straus the individual responding to suggestion is "consciously motivated"—undergoing a purposive experience. This conscious motivation does not imply reacting to the pure logic of a situation. Reasoning occurs, but is influenced by the relation existing between "percipient" and suggestor, as well as by the elements of the suggestion per se. All suggestive ideas expressed by the suggestor are modified by the personal relationship. An acceptance or rejection of the ideas expressed by him is, so to speak, an acceptance or rejection of his whole personality, an inclusion or exclusion of the suggestor in the world of the "percipient." The significance of the suggested detail that carries conviction depends on a variety of causes, chief among them being the amount of subjectivity (in contrast, for example, to a mathematical problem), the appearance of conviction on the part of the suggestor, the extent to which the given detail is "true" to the personality of the recipient.

Operating Room Procedure. For Nurses and Internes. By Henry C. Falk, M.D., Assistant Attending Surgeon to the French Hospital. With a Foreword by Eugene H. Pool, M.D. Cloth. Price, $2.50. Pp. 385, with 275 illustrations. New York: G. P. Putnam's Sons, 1925.

The first part of the book is devoted largely to operating room equipment, with a detailed description of the various supplies. The duties of the medical staff and of the nurses are explained. The second part includes a description of the standard operation on each region of the body, with a specific description of the instruments needed for each operation. The preparation of the patient, the duties of each member of the operating room force, and the various steps of the operation as performed by the surgeon are described. There are numerous simple but illustrative drawings. The brief and accurate descriptions of operative technic would do credit to a work on operative surgery. A reference book of this nature should prove valuable in obtaining better cooperation among members of the surgical staff.

A Manual of Gynecology. By John Cooke Hirst, M.D., F.A.C.S., Associate Professor of Gynecology-Obstetrics, Graduate School of Medicine, University of Pennsylvania. Second edition. Cloth. Price, $3.50. Pp. 508, with 195 illustrations. Philadelphia: W. B. Saunders Company, 1925.

Dr. Hirst believes in brevity rather than redundance, and in clarity of statement rather than the vague circumlocutory discussions that occur not infrequently in the more pretentious treatises on obstetrics and gynecology. He has given us, therefore, a concise but adequate digest of our gynecologic doctrine as it exists today. It can well serve as a basic source of information to the student and might possibly inspire him to search the literature for those rivulets and bayous of knowledge which pour their little contributions into the main stream of this specialty. It is a good manual.

Miscellany

ADAM SMITH ON MEDICAL EDUCATION AND RELATED MATTERS*

RAYMOND PEARL, PH.D., D.SC., LL.D.
Baltimore

During the last year there has been much discussion of the economics of medical education and of medical practice.[1] Many physicians in rural locations have difficulty in making income and outgo maintain a satisfactory relation to each other. It has been suggested that this unfortunate state of affairs arises because medical education has become too expensive, as a result primarily of an ever widening and deepening curriculum. Another suggestion is that the physician, whether urban or rural, merely finds himself enmeshed in the general social and economic circumstances of the times, along with lawyers, preachers, farmers and others, and that his economic difficulties are not peculiarly consequent on either this profession or his education. Whether either or neither of these suggestions is true is not easy of determination, because of the complexity and variety of the factors involved in the problem.

In the meantime, it occurs to me that it will be of interest to read what Adam Smith, the great economist, had to say regarding these matters just a century and a half ago. Probably to no great number of medical men in America are the contents of the letter, which is here reprinted, known; indeed, many do not even know of its existence. But any one who reads it now will be forcibly struck once more with another instance of that common observation that few of the problems of human life have, even in details, any particular novelty. While it is not of record that Mousterian man, sitting in his caverns in that paleolithic metropolis now called Les Eyzies, ever discussed the economics of medical education, I incline somewhat to the opinion that it is only the paucity of any records of these days that enables one to say this.

The circumstances leading to the writing of this letter by Adam Smith were these: For a long time prior to the latter part of the eighteenth century it had been the practice of the universities of St. Andrews and Aberdeen to grant the medical degree in absentia to any person who was able to persuade, by any means whatever, any two physicians to certify that they regarded him as worthy of an M.D. Obviously, this was not a difficult requirement to satisfy, and some very rare birds indeed took advantage of this short, cheap and easy route to the doctorate. So much so that, in 1773, the matter became openly scandalous and the great William Cullen, of nosological fame, at that time professor of the institutes of medicine at Edinburgh, decided to do something about the matter. Accordingly, in 1774, he memorialized Henry, the third Duke of Buccleuch, to enlist his influence to get a Visitation of the Scotch universities "with a view to the correcting of these and other abuses in their constitution and discipline." The duke refused to move in the matter until the memorial had been submitted to his old tutor and friend Adam Smith and his opinion on it had been obtained. Cullen presented his case, and his views thereon, to Smith, and got, in due time, the reply here reprinted. This letter, which amounts to a treatise on medical education and practice, was written two years before the publication of "The Wealth of Nations." It is reprinted as one of the appendixes to McCulloch's edition of that great book. It is also to be found in Thomson's "Account of the Life, Lectures, and Writings of William Cullen, M.D."[2] Both Thomson and McCulloch spend some pages in discussing the letter, but their views are of no particular present interest.

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* From the Institute for Biological Research, Johns Hopkins University.

[1] Mayers, L., and Harrison, L. V.: The Distribution of Physicians in the United States, New York, General Education Board, 1924. Pusey, W. A.: Medical Education and Medical Service, J. A. M. A. **84**: 365-369 (Jan. 31), 437-441 (Feb. 7), 513-515 (Feb. 14), 592-595 (Feb. 21), 1925. Pearl, Raymond: Distribution of Physicians in the United States, ibid. **84**: 1024-1028 (April 4) 1925.

"My dear Doctor:

"I have been very much in the wrong both to you and to the Duke of Buccleugh, to whom I certainly promised to write you in a post or two, for having delayed so long to fulfil my promise. The truth is, some occurrences which interested me a good deal, and which happened here immediately after the duke's departure, made me forget altogether a business which I do acknowledge interested me very little.

"In the present state of the Scotch Universities, I do most sincerely look upon them as, in spite of all their faults, without exception the best seminaries of learning that are to be found anywhere in Europe. They are, perhaps, upon the whole, as unexceptionable as any public institutions of that kind, which all contain in their very nature the seeds and causes of negligence and corruption, have ever been, or are ever likely to be. That, however, they are still capable of amendment, and even of considerable amendment, I know very well, and a Visitation is, I believe, the only proper means of procuring them this amendment. Before any wise man, however, would apply for the appointment of so arbitrary a tribunal, in order to improve what is already, upon the whole, *very well,* he ought certainly to know with some degree of certainty first, who are likely to be appointed visitors; and, secondly, what plan of reformation those visitors are likely to follow. But, in the present multiplicity of pretenders to some share in the provincal management of Scotch affairs, these are two points, which I apprehend neither you nor I, nor the Solicitor-General, nor the Duke of Buccleugh, can possibly know anything about. In the present state of our affairs, therefore, to apply for a Visitation in order to remedy an abuse, which is not perhaps of great consequence to the public, would appear to me to be extremely unwise. Hereafter, perhaps an opportunity may present itself for making such an application with more safety.

"With regard to any admonition or threatening, or any other method of interfering in the affairs of a body corporate, which is not perfectly and strictly regular and legal, these are expedients which I am convinced neither his Majesty nor any of his present Ministers would choose to employ either now or at any time hereafter, in order to obtain an object even of much greater consequence than this reformation of Scotch degrees.

"The monopoly of medical education which this regulation would establish in favour of Universities would, I apprehend, be hurtful to the lasting prosperity of such bodies-corporate. Monopolists very seldom make good work, and a lecture which a certain number of students must attend, whether they profit by it or no, is certainly not very likely to be a good one. I have thought a great deal upon this subject, and have inquired very carefully into the constitution and history of several of the principal Universities of Europe. I have satisfied myself, that the present state of degradation and contempt into which the greater part of those societies have fallen in almost every part of Europe, arises principally, first, from the large salaries which in some Universities are given to professors, and which render them altogether independent of their diligence and success in their professions; and, secondly, from the great number of students, who, in order to get degrees, or to be admitted to exercise certain professions, or who, for the sake of bursaries, exhibitions, scholarships, fellowships, etc., are obliged to resort to certain societies of this kind, whether the instructions which they are likely to receive there are or are not worth receiving. All those different causes of negligence and corruption, no doubt take place in some degree in all our Scotch Universities. In the best of them, however, those causes take place in a much less degree than in the greater part of other considerable societies of the same kind; and I look upon this circumstance as the real cause of their present excellence. In the medical College of Edinburgh in particular, the salaries of the Professors are insignificant. There are few or no bursaries or exhibitions, and their monopoly of degrees is broken in upon by all other Universities, foreign and domestic. I require no other explication of its present acknowledged superiority over every other society of the same kind in Europe.

"To sign a certificate in favour of any man whom we know little or nothing about, is most certainly a practice which cannot be strictly vindicated. It is a practice, however, which, from mere good nature, and without interest of any kind, the most scrupulous men in the world are sometimes guilty of. I certainly do not mean to defend it. Bating the unhandsomeness of the practice, however, I would ask in what manner does the public suffer by it? The title of Doctor, such as it is, you will say, gives some credit and authority to the man upon whom it is bestowed; it extends his practice, and consequently his field for doing mischief; it is not improbable, too, that it may increase his presumption, and consequently his disposition to do mischief. That a degree injudiciously conferred may sometimes have some little effect of this kind, it would surely be absurd to deny: but that this effect should be very considerable, I cannot bring myself to believe. That Doctors are sometimes fools as well as other people, is not, in the present time, one of those profound secrets which is known only to the learned. The title is not so very imposing, and it very seldom happens that a man trusts his health to another merely because that other is a doctor. The person so trusted has almost always either some knowledge or some craft which would procure him nearly the same trust, though he was not decorated with any such title. In fact, the persons who apply for degrees in the irregular manner complained of, are, the greater part of them, surgeons or apothecaries, who are in the custom of advising and prescribing, that is of practising as physicians; but who, being only surgeons and apothecaries, are not fee-ed as physicians. It is not so much to extend their practice as to increase their fees, that they are desirous of being made doctors. Degrees conferred even undeservedly upon such persons can surely do very little harm to the public. When the University of St. Andrew's, very rashly and imprudently, conferred a degree upon Green, who happened to be a stage-doctor, they no doubt brought much ridicule and discredit upon themselves; but in what respect did they hurt the public? Green still continued to be what he was before, a stage-doctor, and probably never poisoned a single man more than he would have done though the honours of graduation had never been conferred upon him. Stage-doctors, I must observe, do not much excite the indignation of the faculty; more reputable quacks do. The former are too contemptible to be considered as rivals: They only poison the poor people; and the copper-pence which are thrown up to them in handkerchiefs, could never find their way into the pocket of a regular physician. It is otherwise with the latter: They sometimes intercept a part of what perhaps would have been better bestowed in another place. Do not all the old women in the country practice physic without exciting murmur or complaint? And if here and there a graduated doctor should be as ignorant as an old woman, where can be the great harm? The beardless old woman, indeed, takes no fees; the bearded one does, and it is this circumstance, I strongly suspect, which exasperates his brethren so much against him.

"There never was, and, I will venture to say, there never will be, a University from which a degree could give any tolerable security, that the person upon whom it had been conferred, was fit to practise physic. The strictest Universities confer degrees only upon students of a certain standing. Their real motive for requiring this standing is, that the student may spend more money among them, and that they may make more profit by him. When he has attained this standing, therefore, though he still undergoes what they call an examination, it scarce ever happens that he is refused his degree. Your examination at Edinburgh, I have all reason to believe, is as serious, and perhaps more so than that of any other University in Europe. But when a student has resided a few years among you, has behaved dutifully to all his Professors, and has attended regularly all their lectures, when he comes to his examination, I suspect you are disposed to be as good-natured as other people. Several of your graduates, upon applying for a licence to the College of Physicians here, have had it recommended to them to continue their studies. From a particular knowledge of some of the cases, I am satisfied that the decision of the College, in refusing them their licence, was perfectly just; that is, was perfectly agreeable to the principles which ought to regulate all such decisions, and that the candidates were really very ignorant of their profession.

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[2] 1: 473-481, 1859.

"A degree can pretend to give security for nothing but the science of the graduate; and even for that it can give but a very slender security. For his good sense and discretion, qualities not discoverable by an academical examination, it can give no security at all. But without these, the presumption which commonly attends science must render it, in the practice of physic, ten times more dangerous than the grossest ignorance, when accompanied, as it sometime is, with some degree of modesty and diffidence.

"If a degree, in short, always has been, in spite of all the regulations which can be made, always must be, a mere piece of quackery, it is certainly for the advantage of the public that it should be understood to be so. It is in a particular manner for the advantage of the Universities, that, for the resort of students, they should be obliged to depend, not upon their privileges, but upon their merit,—upon their abilities to teach, and their diligence in teaching; and that they should not have it in their power to use any of those quackish arts which have disgraced and degraded the half of them.

"A degree which can be conferred only upon students of a certain standing is a statute of apprenticeship which is likely to contribute to the advancement of science, just as other statutes of apprenticeship have contributed to that of arts and manufactures. Those statutes of apprenticeship, assisted by other corporation laws, have banished arts and manufactures from the greater part of towns-corporate. Such degrees, assisted by some other regulations of a similar tendency, have banished almost all useful and solid education from the greater part of Universities. Bad work and high price have been the effects of the monopoly introduced by the former. Quackery, imposture and exorbitant fees, have been the consequences of that established by the latter. The industry of manufacturing villages has remedied in part the inconveniences which the monopolies established by towns-corporate had occasioned. The private interest of some poor Professors of Physic in some poor Universities, inconveniently situated for the resort of students, has in part remedied the inconveniences which would certainly have resulted from that sort of monopoly which the great and rich Universities had attempted to establish. The great and rich Universities seldom graduated anybody but their own students, and not even them till after a long and tedious standing; five and seven years for a Master of Arts; eleven and sixteen for a Doctor of Law, Physic, or Divinity. The poor Universities, on account of the inconveniency of their situation, not being able to get many students, endeavored to turn the penny in the only way in which they could turn it, and sold their Degrees to whoever would buy them, generally without requiring any residence or standing, and frequently without subjecting the candidate even to a decent examination. The less trouble they gave the more money they got, and I certainly do not to pretend to vindicate so dirty a practice. All Universities being ecclesiastical establishments, under the immediate protection of the Pope, a degree from any one of them gave, all over Christendom, very nearly the same privileges which a degree from any other could have given; and the respect which is at this day paid to foreign degrees, even in the Protestant countries, must be considered as a remnant of popery. The facility of obtaining degrees, particularly in physic, from those poor Universities, had two effects, both extremely advantageous to the public, but extremely disagreeable to the graduates of other Universities, whose degrees had cost them much time and expense. *First,* It multiplied very much the number of doctors, and thereby no doubt sunk their fees, or at least hindered them from rising so very high as they otherwise would have done. Had the Universities of Oxford and Cambridge been able to maintain themselves in the exclusive privilege of graduating all the doctors who could practice in England, the price of feeling a pulse might by this time have risen from two and three guineas, the price which it has now happily arrived at, to double or triple that sum; and English physicians might, and probably would, have been at the same time the most ignorant and quackish in the world. *Secondly,* It reduced a good deal the rank and dignity of a doctor. But if the physician was a man of sense and science, it would not surely prevent his being respected and employed as a man of sense and science. If he was neither the one nor the other, indeed, his doctorship would no doubt avail him the less. But ought it in this case to avail him at all? Had the hopeful project of the rich and great Universities succeeded, there would have been no occasion for sense or science. To have been a doctor would alone have been sufficient to give any man rank, dignity and fortune enough. That in every profession the fortune of every individual should depend as much as possible upon his merit, and as little as possible upon his privilege, is certainly for the interest of the public. It is even for the interest of every particular profession, which can never so effectually support the general merit and real honour of the greater part of those who exercise it, as by resting upon such liberal principles. Those principles are even most effectual for procuring them all the employment which the country can afford. The great success of quacks in England has been altogether owing to the real quackery of the regular physicians. Our regular physicians in Scotland have little quackery, and no quack accordingly has ever made his fortune among us.

"After all, this trade in degrees I acknowledge to be a most disgraceful trade to those who exercise it; and I am extremely sorry that it should be exercised by such respectable bodies as any of our Scotch Universities. But as it serves as a corrective to what would otherwise soon grow up to be an intolerable nuisance, the exclusive and corporation spirit of all thriving professions and of all great Universities, I deny that it is hurtful to the public.

"What the physicians of Edinburgh at present feel as a hardship is, perhaps, the real cause of their acknowledged superiority over the greater part of other physicians. The Royal College of Physicians there, you say, are obliged by their charter to grant a licence, without examination, to all the graduates of Scotch universities. You are all obliged, I suppose, in consequence of this, to consult sometimes with very unworthy brethren. You are all made to feel that you must rest no part of your dignity upon your degree, distinction which you share with the men in the world, perhaps, whom you despise the most, but that you must found the whole of it upon your merit. Not being able to derive much consequence from the character of Doctor, you are obliged, perhaps, to attend more to your characters as men, as gentlemen, and as men of letters. The unworthiness of some of your brethren, may, perhaps, in this manner be in part the cause of the very eminent and superior worth of many of the rest. The very abuse which you complain of may in this manner, perhaps, be the real source of your present excellence. You are at present well, wonderfully well, and when you are so, be assured there is always some danger in attempting to be better.

"Adieu, my dear Doctor; after having delayed so long to write to you, I am afraid I shall *get my lug* (ear) *in my lufe* (hand), as we say, for what I have written. But I ever am most affectionately yours,

"Adam Smith.

"London, 20th Sept. 1774."

It would certainly be unwise to risk damage to such a gem by attempting to polish or recut it. I therefore confine myself merely to the completion of the story. Adam Smith's letter stopped all further proceedings. No Visitation was had, and many years passed before the conditions which worried Dr. Cullen, and so little disturbed Adam Smith, were altered by the universities themselves. That the letter had such a result was presumably at that time, as it will be now, deplored by all right-thinking, forward-looking citizens.

Medicolegal

Death from Use of Infected Blackhead Eradicator

(James v. State Life Ins. Co. (Ind.), 147 N. E. R. 533)

The Appellate Court of Indiana says that in this action, brought on an insurance policy, the beneficiary alleged in her complaint that the insured went into a barber shop to be shaved and that the barber, while shaving the insured, found a small pimple or boil on the insured's chin, "which said barber opened with a blackhead eradicator, causing an abrasion and puncturing the skin of said insured"; that unknown to, or unsuspected by, the insured or the barber or the plaintiff, "said blackhead eradicator was infected, and accidentally infected, with streptococci"; that as a result of said abrasion and puncture a streptococcic infection started in the face of the insured, spread throughout his system, and as a result he became poisoned, infected, and died. The court holds that it was sufficiently alleged in the complaint that the infection on the instrument used was the source of the infection which started on the face of the insured. There was not here a series of happenings. The face of the insured was not first punctured with an aseptic instrument and then by other means the punctured part of the face infected. As alleged in the complaint, there was a puncture made by an infected instrument. But a single cause of death was alleged. It was alleged that the death of the insured was due to a streptococcic infection caused by the abrasion and puncture of the skin with the blackhead eradicator, which at the time was accidentally infected with the virulent bacteria. The conclusion of the court is that the facts alleged in the complaint showed that the death of the insured was the result of a bodily injury sustained and effected through external, violent and accidental means, within the meaning of an indemnity clause of the policy sued on, and that the action of the court below in sustaining a demurrer to the complaint was error.

Duties of Physicians and Surgeons—As to Substitutes

(Nash v. Royster (N. C.), 127 S. E. R. 356)

The Supreme Court of North Carolina, in ordering a new trial after the plaintiff had obtained a judgment, says that, the plaintiff having a swelling above her left knee, the defendant made an incision, removed the pus, and put in a small drain. That night he left the city for about two weeks. The knee joint became affected, and, on the eighth day after the defendant operated, an operation was performed, for purulent arthritis, by two other surgeons, one of whom the defendant said he told the plaintiff's parents would look after the patient while he was away, which that surgeon and another corroborated, but which was denied by the plaintiff's evidence. Damages were awarded by the jury on the theory that the defendant had negligently left the case, which resulted in injury, or that the substitute surgeon had negligently delayed the second operation, thereby producing harmful results for which the defendant was responsible.

The supreme court thinks that the trial court erred in holding, as a matter of law, that the relation of principal and agent, between the defendant and the surgeon who was to look after the patient, necessarily followed from what took place unless the arrangement had been consented to by the plaintiff or her parents. Whether an agency in fact had been created was to be determined by the relations actually existing between the parties under their agreements or acts. In this respect, the testimony of another physician touching the subject of custom among local physicians, excluded on the hearing, was competent as bearing on the question of agency, or the relation existing between the defendant and the other surgeon. By the clear weight of authority, a physician or surgeon who sends a substitute practitioner to treat a case, on becoming unable personally to fill a professional engagement, is not liable for the latter's negligence or malpractice, unless the substitute acts as his agent in performing the service, or due care is not exercised in selecting the substitute practitioner. And there may be a distinction, depending on the character of the engagement, between sending a substitute practitioner to take full charge of a case, and sending him only for the purpose of looking after the patient during the absence of the sender.

The duty which a physician or surgeon owes to his patient must be measured and determined primarily and in the first instance by the contract of employment. A physician or surgeon may agree to perform an operation without undertaking, or rendering himself responsible for, the subsequent treatment of the case. He thus contracts against liability beyond the exercise of reasonable care, diligence and skill in the performance of the operation and for such services as are contemplated by both parties to the special or limited contract. A physician or surgeon is not bound to render professional services to every one who applies, and he may, therefore, by notice or special agreement, limit the scope of his employment. Such is the simple law of contract. But when a physician or surgeon takes charge of a case and is employed to attend a patient, unless the terms of employment otherwise limit the service, or notice be given that he will not undertake, or cannot afford, the subsequent treatment, his employment, as well as the relation of physician and patient, continues until ended by the mutual consent of the parties, or revoked by the dismissal of the physician or surgeon, or until his services are no longer needed. And he must exercise, at his peril, reasonable care and judgment in determining when his attendance may properly and safely be discontinued. As a general rule, in the absence of any special agreement limiting the service, or reasonable notice to the patient, when a surgeon is employed to perform an operation, he must not only use reasonable and ordinary care, skill and diligence in its performance, but, in the subsequent treatment of the case, he must also give, or see that the patient is given, such attention as the necessity of the case demands.

But the law does not require of a physician or surgeon absolute accuracy, either in his practice or in his judgment. It does not hold him to a standard of infallibility, nor does it require of him that utmost degree of skill and learning known only to a few in the profession. He is not answerable for mere errors of judgment, where good judgments may differ; but he is supposed to exercise an enlightened judgment, and it must be founded on his intelligence. He engages to bring to his patient's case a fair, reasonable and competent degree of skill and to apply it with ordinary care and diligence, in the exercise of his best judgment. Liability may attach for errors of judgment, however, when they are so gross as to be inconsistent with that degree of skill and competence which it is the duty of every physician or surgeon to employ in the treatment of a case. It is error to say that there is an implied contract that he will use "all known and reasonable means" to accomplish the object for which he is employed.

Society Proceedings

COMING MEETINGS

American Pharmacological Society, Cleveland, Dec. 28-31. Dr. E. D. Brown, University of Minnesota, Minneapolis, Minn., Secretary.

American Physiological Society, Cleveland, Dec. 29-31. Dr. W. J. Meek, Science Hall, Madison, Wis., Secretary.

American Society for Experimental Pathology, Cleveland, Dec. 28-30. Dr. E. B. Krumbhaar, Philadelphia General Hospital, Philadelphia, Sec'y.

American Society of Biological Chemistry, Cleveland, Dec. 28-30. Dr. D. W. Wilson, University of Pennsylvania School of Medicine, Philadelphia, Secretary.

District of Columbia, Medical Society of, Washington, D. C., Dec. 2. Dr. C. B. Conklin, 500 Medical Science Bldg., Washington, D. C., Sec'y.

Federation of American Societies for Experimental Biology, Cleveland, Dec. 29-31. Dr. Walter J. Meek, Science Hall, Madison, Wis., Sec'y.

Philippine Islands Medical Association, Manila, Dec. 16-19. Dr. Isabelo Concepcion, College of Medicine and Surgery, Manila, Secretary.

Porto Rico, Medical Association of, Coami, Dec. 14-15. Dr. R. M. Suarez, Box 314, Santurce, Secretary.

Radiological Society of North America, Cleveland, Dec. 7-11. Dr. Robert J. May, St. Luke's Hospital, Cleveland, Secretary.

Society of American Bacteriologists, Madison, Wis., Dec. 29-31. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.

Southern Surgical Association, Louisville, Ky., Dec. 15-17. Dr. Hubert A. Royster, 423 LaFayette Street, Raleigh, N. C., Secretary.

Western Surgical Association, Wichita, Kan., Dec. 18-19. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Minn., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to The Journal for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Albany, N. Y.

15: 847-942 (Oct.) 1925

Cause of Scarlet Fever. R. W. Pryer, Detroit.—p. 847.
Health Examinations and Health Officer. W. M. Dickie, Sacramento, Calif.—p. 853.
*Prevalence of Smallpox. C. C. Pierce, Chicago.—p. 855.
Anaerobes in Sewerage. F. E. Greer, Chicago.—p. 860.
*Should Schick Test Be Abandoned? W. H. Kellogg, Berkeley, Calif.—p. 868.
*Does Intensive Work on Carriers Decrease Diphtheria? W. R. Stokes, J. F. Hogan and C. L. Ewing, Baltimore.—p. 873.
Garbage Collection and Disposal in Small Communities. L. E. Poole, *Fairfield, Conn.—p. 880.*
*Detection of Carriers of B. Typhosus and B. Paratyphosus. R. Gilbert, F. C. Stewart and H. H. Owen, Albany.—p. 883.
Family of Typhoid Carriers. A. D. Dulaney, Columbia, Mo.—p. 885.
Commercial Salesmanship Applied to Public Health Work. C. F. Rogers, Cleveland.—p. 891.

Prevalence of Smallpox.—Pierce urges that energetic statewide vaccination programs, during this present year, by state health departments, should be carried out as rapidly as possible to prevent an increase in smallpox in the United States during next winter.

Should Shick Test Be Abandoned?—Observations are recorded by Kellogg showing that the Schick test is subject to errors in its application, which more than offset the value of the information derived from its use. A high percentage of false negative Schick tests has been found in persons following immunization, the information as to their true status having been determined by laboratory test using the Kellogg method. The Schick test is of academic interest only and should be abandoned completely for the following reasons: It is subject to a sufficient percentage of false negative readings to result in the failure of protection of children who otherwise would have been protected. Knowledge of the immune status of children is not required, as most of those in the age group most concerned are susceptible, while immunization of the balance is open to no objection. General immunization of children without further attention to whether or not immunity has been attained will result in complete public health control of diphtheria. For determining the immune status of individuals and small groups, where this information is specially desired, the laboratory test devised by the author is convenient and accurate.

Diphtheria Prevention.—Stokes, Hogan and Ewing believe from their investigations and those of others that it is reasonable to suppose that virulent carriers in infected houses, and to a lesser extent in schools where diphtheria cases have occurred, are capable of transmitting diphtheria. It is reasonable, therefore, even though statistics are only suggestive, to separate these virulent carriers from the public. They believe that placing restrictions on these carriers has had a beneficial effect on the diphtheria morbidity in Baltimore during the last decade, but that the disease can only be practically eliminated by the additional use of the toxin-antitoxin mixture.

Detection of Typhoid Bacilli.—The results cited by Gilbert, Stewart and Owen clearly indicate the necessity for submitting for examination specimens of feces and urine when a search for organisms of the enteric disease group is undertaken. The examination of blood specimens is also valuable, since the advisability of submitting a series of specimens for cultural examination would be indicated, if definite or partial agglutination should be obtained in instances where no organisms of significance are isolated from the first specimens of feces and urine.

American Journal of Roentgenology and Radium Therapy, New York

14: 291-380 (Oct.) 1925

Interdependence of Urology and Roentgenology. H. H. Young, Baltimore.—p. 291.
Roentgen-Ray Findings in Uncommon Causes of Hemoptysis. D. S. Beilin, Chicago.—p. 304.
*Report of 5,000 Gastro-Intestinal Examinations by Roentgen-Ray. A. S. Merrill, Manchester, N. H.—p. 310.
*Report of 1,326 Roentgen-Ray Examinations for Suspected Urinary Calculi. H. J. Walton and J. H. Luscinian, Baltimore.—p. 320.
*Roentgen-Ray Therapy in Bronchial Asthma. M. A. Ramirez and L. G. Cole, New York.—p. 322.
*Effect of Exposure to Roentgen-Rays on Reproduction in Male Rats. D. R. Hooker, Baltimore.—p. 327.
Units in Superficial Roentgenotherapy. G. C. Andrews, New York.—p. 336.
Tetra-Iodophenolphthalein Sodium Salt. H. T. Clarke and E. E. Dreger, Rochester, N. Y.—p. 341.

Gastro-Intestinal Roentgen-Ray Examinations.—The proved error in 818 cases in which exploration was done by Merrill was approximately 4 per cent. The positive error, i. e., diagnosis of disease when none was found at operation, was 1.2 per cent. Of 2,176 cases roentgenologically negative, in only 117 was exploration done. No gastric ulcer or cancer found at operation was missed by the roentgen ray. Two duodenal ulcers were missed. In 551 cases showing, roentgenologically, ptosis only, a clinical diagnosis of peptic ulcer had been made in 8 per cent. In duodenal ulcer the roentgen-ray findings were confirmed in 92 per cent. of the cases. Only about one half of the duodenal ulcers correctly diagnosed by the roentgen ray had been recognized clinically. In gastric ulcer the findings were confirmed in 93 per cent. The correct clinical diagnosis was made in 56 per cent. In gastric cancer the results were correct in ninety-five out of ninety-seven in which operation was performed. The clinical diagnosis was right or nearly right in fifty-five cases. Pyloric obstruction was correctly diagnosed in all of thirty-two cases in which operation was performed. Disease of the appendix was indicated by the roentgen ray in 372 cases. Out of thirty-five cases coming to operation, the diagnosis was confirmed in thirty-four. Fourteen of these had been diagnosed clinically. In thirty-four cases of gallbladder disease in which exploration was done, out of 171 cases so suggested by the roentgen ray, the diagnosis was confirmed in thirty-two. The roentgen-ray diagnosis in esophageal conditions was confirmed in all cases by esophagoscopic examination or operation. Forty-seven out of fifty-one cases diagnosed as adhesions were confirmed at operation.

Roentgenoscopy for Urinary Calculi.—Of 1,326 roentgen-ray examinations for suspected urinary calculi, Walton and Luscinian point out that only 16.04 per cent. showed positive shadows. Hypertrophic arthritis of the spine gives rise to symptoms simulating those occasioned by urinary calculi. The proportion of positive findings in male and female patients was two to one. Calculi were more frequent on the right side. Pyelograms showed hydronephrosis and hydroureter to be far more common on the right side. Gallstone attacks may simulate renal colic. The size of the majority of calculi was small, being less than 1 cm. in diameter.

Roentgenotherapy in Bronchial Asthma.—Though an analysis of the case records cited by Ramirez and Cole would seem to show that roentgen-ray therapy offers no particular advantage over other methods of treatment in bronchial asthma, the definite effect noted in some cases would indicate that a modification of the present technic, or possibly a more careful selection of suitable cases, may offer more encouraging results.

Effect of Roentgen Ray on Reproduction.—Male rats were submitted by Hooker to various roentgen-ray exposures and observed for the effect on (*a*) sperm motility, and (*b*) fertility. While it is readily possible to produce nonmotile sperm and aspermia, as well as transitory infertility and sterility, it is quite impossible to standardize the exposures so as to foretell with any degree of certainty the effect that will be produced on the reproductive glands. This inability to obtain even approximately consistent results indicates an extreme difference in individual resistance not hitherto recognized in [illegible] of this kind.

Annals of Surgery, Philadelphia

82: 513-672 (Oct.) 1925

- *Brain Surgery. W. E. Dandy, Baltimore.—p. 513.
- *Renal Tuberculosis. M. Persson, Stockholm, Sweden.—p. 526.
- *Malignant Tumors of Testicle. F. Hinman, T. E. Gibson, Los Angeles, and A. A. Kutzmann, San Francisco.—p. 552.
- *Retroperitoneal Hernia. W. E. Lower and C. C. Higgins, Cleveland.—p. 576.
- Histologic and Pathologic Anatomy of Hepatic, Cystic and Common Bile Ducts. V. G. Burden, Rochester, Minn.—p. 584.
- *Spontaneous Rupture of Spleen. H. S. Hansell, Washington, D. C.—p. 598.
- Fascial Bands as Supports to Relaced Facial Tissue. C. C. Miller, Chicago.—p. 603.
- Compensatory Lengthening of Femur in Children After Fracture. W. H. Cole, St. Louis.—p. 609.
- Active Motion in Treatment of Fractures. J. L. Yates and G. W. Stevens, Milwaukee.—p. 617.
- Traumatic Luxation of Head of Fibula. H. H. M. Lyle, New York.—p. 635.
- *Efficiency and Inefficiency of Certain Skin Antiseptics. M. B. Tinker and H. B. Sutton, Ithaca, N. Y.—p. 640.

Brain Surgery: Dural Endothelioma.—A case is presented by Dandy of a dural endothelioma (an encapsulated benign tumor) arising from the covering of the cribriform plate, occupying both sides of the cranial chamber to an equal degree. The tumor was completely removed after a preliminary resection of the left frontal lobe. No loss of function of any kind followed the operation. This procedure (resection of a silent cerebral lobe in part or whole) is advocated as a method for the removal of certain intracranial tumors known to be benign, which are situated at such a depth as to be in large part or wholly hidden from view. The purpose of the method is to provide a good exposure of the tumor so that the brain may not be injured in reaching and removing the tumor, that the tumor may be extirpated carefully, and that bleeding may be controlled deliberately instead of being left to chance. An intracranial approach with concealed incisions is also discussed.

Renal Tuberculosis.—Two hundred and ninety-five cases of surgical renal tuberculosis, 205 of which were subjected to operation are analyzed by Persson. All the patients, except twelve (eight of whom were operated on), were seen and examined again at a later date. The material shows that the frequency of renal tuberculosis in men is almost twice that in women. Hereditary tendency can be traced in 25 per cent. of the cases. Almost two thirds of the patients were in the third or fourth decades of their lives. The cases of localization to the right kidney exceed those of the left (of operated cases: 109 to eighty-eight). Coincident tuberculosis in other organs has been shown only in about half of all the cases; pulmonary tuberculosis in 22.4 per cent.; genital tuberculosis (of men only), in 15.6 per cent. Bladder irritability has been found as an initial symptom in 74 per cent. of the cases; pains in the kidney region in 18.5 per cent.; serious hematuria in 5.5 per cent. Succeeding symptoms have been: bladder irritability (a further 18.1 per cent.); macroscopic hematuria (in a further 45.2 per cent. of the cases). Incontinence has occurred in 2.7 per cent. of the cases. The absence of albuminuria has been noted in seven patients. Pyuria has never been absent. Tubercle bacilli have been demonstrated in 85.6 per cent. of the cases. Palpable kidney is noted in 25 per cent.; tender but not palpable in 9 per cent. The extent and grade of the bladder tuberculosis seems to have exercised a considerable influence on the final result of the operated cases. In slight ulcerations of the bladder, the late mortality has been almost three times greater than when such have been absent (37.7 per cent. and 13.2 per cent., respectively); in extensive ulcerations, the mortality has been extremely almost half, and probably more have been bilteral cases. Within five years after the clinical beginning of the disease, 63 per cent. of those on whom no operation had been performed died; as a rule, they died of urogenital tuberculosis, but, in some instances, of miliary tuberculosis and pulmonary tuberculosis. It has been impossible to demonstrate spontaneous healing of tuberculosis of the kidney in a single case. One patient, surviving twenty-seven years after hospital treatment, displayed so-called autonephrectomy. Another case, after seventeen years' observation, displayed subjectively perfect freedom and microscopically perfectly normal urine; the guinea-pig test, however, was positive. Post-examination of cases treated by nephrectomy and kidney resection exhibit no favorable result. Bad results are also shown after nephrectomy in bilateral cases. The total operative mortality in nephrectomy for unilateral renal tuberculosis amounts to 7.3 per cent. The late mortality amounts to 24.7 per cent. Forty-four and four-tenths per cent. of the late deaths were caused by disease—tuberculosis in every case but one—of the remaining kidney. In 35.5 per cent., the cause of death has been pulmonary tuberculosis; in 13.3 per cent., miliary tuberculosis. Fifty-seven and one-tenth per cent. of all the operated patients are, on post-examination, healthy; another 5.5 per cent. exhibit an evident improvement. Five per cent. of all the operated patients are worse, but still alive.

Malignant Tumors of Testis.—Hinman and his associates review twenty-two cases of malignant tumors of the testis and submit a classification of testicular tumors which is a modification of Schultz and Eisendrath.

Retroperitoneal Hernia.—Two cases of this sort are reported by Lower and Higgins. An investigation of the literature shows that the incidence of retroperitoneal hernia is relatively rare, and that the majority of the reported cases are of the paraduodenal type. The literature includes reports of thirty cases of right and 100 of left paraduodenal hernia, to each of which they add one more. The diagnosis is rarely made before operation. Surgical intervention is necessary, but the operation is hazardous. The vessels in close proximity to the margin of the fossa must be avoided. If the hernia can be reduced and a satisfactory ligation of the sac can be made, complete recovery should follow.

Spontaneous Rupture of Spleen.—Malaria apparently was the cause of the rupture in Hansell's case. He feels that sharp pain in the left shoulder and arm, occurring in a case showing signs of internal hemorrhage, is quite suggestive of a ruptured spleen. Immediate splenectomy with blood transfusion is urged as a means of reducing the mortality materially.

Comparative Value of Skin Antiseptics.—Tinker tested the efficiency as skin antiseptics of iodin, picric acid, Harrington's solution, mercurochrome, acriflavine and acriviolet. Acriflavine, 5 per cent. in 50 per cent. alcohol, proved most efficient. Next came acriviolet, 2 per cent. in 50 per cent. alcohol; then 5 per cent. alcoholic iodin; acriviolet, 10 per cent. aqueous, and Harrington's solution. Picric acid, 5 per cent., in 95 per cent. alcohol, and mercurochrome, 5 per cent. in 50 per cent. alcohol, were the least effective.

Arkansas Medical Society Journal, Little Rock

22: *101-120 (Oct.) 1925*

- Relationship of Preliminary Treatment to Mortality Rate in Suprapubic Prostatectomy. V. C. Hunt, Rochester, Minn.—p. 101.
- Roentgen-Ray Treatment of Bone Tuberculosis. J. D. Southard, Fort Smith.—p. 107.
- Intestinal Obstruction as Result of Infective Processes Within Abdomen. G. H. Altman, Helena.—p. 110.

Boston Medical and Surgical Journal

193: 756-806 (Oct. 22) 1925

- Experience with Certain Industrial Poisons. W. F. Boos, Boston.—p. 756.
- Year of Endoscopy. L. Richards, Boston.—p. 761.
- *Value of Specific Treatment in Cardiovascular Syphilis. B. I. Goldberg, Boston.—p. 768.
- *Optic Canal in Optic Atrophy. L. E. White, Boston.—p. 771.

Value of Specific Treatment in Cardiovascular Syphilis.—Goldberg's experience has shown that more efficient examination has disclosed a greater percentage of cardiovascular syphilis than was formerly believed. The Wassermann reaction is negative in an appreciable percentage of cases and does not rule out the presence of cardiovascular syphilis. These cases should be subjected to a definite and persistent course of combined antisyphilitic treatment—such a course is outlined by Goldberg. Whenever possible, arsphenamin, or allied arsenicals, should be given, as this form of therapy is far more effective than any other. Antisyphilitic treatment has conclusively been proved to have resulted in the amelioration of symptoms, especially the harassing pain of angina pectoris of syphilitic origin, and has been known to be of benefit in all cardiac deficiencies which have a specific basis.

Optic Canal in Optic Atrophy.—This is the third paper by White devoted to the study of optic canals. In the first, it was shown that excessive pneumatization of the sinuses adjacent to the canals produced narrowing and distortion. In a series of roentgenograms it was found that patients with optic nerve disturbances had abnormally small canals. By analyzing thirty-six cases of optic nerve involvement, it was found that in 50 per cent. of the patients with the smaller canals, vision was permanently impaired, while in patients with larger canals the percentage was much less. Sixty-seven cases of optic atrophy were studied. These were divided into five groups according to the size of the optic canal. Nasal infection was responsible for atrophy in twelve out of 124 canals, or 10 per cent. Increased intracranial pressure seemed to be responsible for the abnormally large optic canals as intracranial lesions were found in all. Atrophy of the optic nerve in infancy was not responsible for the very small canals. While it is possible to enlarge the optic canal surgically, cases are rarely seen at the stage when it would be beneficial.

California and Western Medicine, San Francisco

23: 1265-1336 (Oct.) 1925

Practical Treatment of Diabetes. F. M. Allen, Morriston, N. J.—p. 1265.
Classification and Results of Treatment of Hay-Fever. F. R. Menagh, Detroit, and G. M. Fister, Brigham, Utah.—p. 1273.
Lipiodol in Diagnosis of Chest Disease. H. E. Ruggles, and L. Bryan, San Francisco.—p. 1280.
Relation of Metabolic Toxins to Dermatoses. O. V. Schroeter, Los Angeles.—p. 1281.
Mastoid Surgery. C. F. Welty, San Francisco.—p. 1284.
California Statute Authorizing the Court's Expert: It's History and Function. A. S. Lobingier, Los Angeles.—p. 1287.
*Preoperative Preparation and Surgical Treatment of Chronic Splenic Anemia (Banti's Disease). L. P. Bell, Woodland.—p. 1288.
Relation of Clinical Pathologist to Surgical Practice. V. C. Hunt, Rochester, Minn.—p. 1293.
Management and Treatment of Burns. H. J. Ring, Ferndale.—p. 1296.
*Mortality Rates of Carcinoma of Uterus in California. A. B. Spalding, San Francisco.—p. 1297.
Results of Insulin Treatment in Pregnancy Complicated by Diabetes Mellitus and Funnel Pelvis. L. Peters, Alameda, Calif.—p. 1300.
Management of Tumors of Urinary Bladder. P. A. Ferrier, Pasadena. —p. 1303.
Chronic Back Pain from a Mechanical Point of View. J. Dunlop, Los Angeles.—p. 1307.
Pathology of Colitis. C. E. Smith, San Francisco.—p. 1311.
Recognition of Surgical Diseases of Gallbladder. C. S. James, Los Angeles.—p. 1313.
Reflex Nervous Disorders as Described by Babinski. A. R. Timme, Los Angeles.—p. 1315.
*Unusually Extensive Injury. S. M. Sproat, Portola.—p. 1318.
Congenital Cystic Kidney. W. Pritchard, Colton.—p. 1319.
Treatment of Otitis-Media. B. C. Davis, Los Angeles.—p. 1320.

Chronic Splenic Anemia.—In the cases reported by Bell, the respiratory or streptococcic etiology was the most probable. In one unoperated case there has been a marked improvement on one transfusion and removal of the focus of infection in the teeth. All have exacerbations of their anemia, with thrombophlebitis of the spleen following respiratory infection. It is Bell's belief that splenic anemia can be arrested in its early stages by removal of foci of infection, such as infected teeth and tonsils, which are the portals of entry of the streptococcus. The resistance of the individual at the same time should be strengthened by transfusions. Splenic anemia patients in a well advanced state should be splenectomized as soon as possible after careful preparation by transfusion and rest. If splenectomy is resorted to before an advanced degree of cirrhosis has taken place, complete and permanent cures are obtained. Great care should be observed not to operate in a state of acute thrombophlebitis with temperature elevation.

Mortality of Carcinoma of Uterus.—Spalding reports his experience with 117 cases of cancer of the uterus. With the patients treated before 1921, 71 per cent. either died or had recurrence. Fifteen per cent. were without recurrence from three to seven years, while 14 per cent. were without recurrence as long as traced, being lost track of, however, before the three year period was reached. Fifty per cent. were operated on, of whom 31.2 per cent. were cured and 19 per cent. died as a result of operation. Since 1921, radium and deep roentgen ray have been used more extensively, and only 15 per cent. of the patients have been operated on. The time is too short to judge fairly the comparative value of irradiation versus operation, and the problem is more complicated because since using radium and deep roentgen-ray therapy, although more patients are being received for treatment, a much larger percentage of the patients show advanced cancer growth. Of twenty-five patients dead after irradiation *treatment, the life duration was less than with twenty patients* dead after operation. However, of the twenty-five patients dead after irradiation, one died of an accident, one of a heart lesion, five had had incomplete operations by outside doctors before radiation treatment, and two died following hysterectomy by their family physicians after radium. Spalding says that the prognosis for early cancer of the uterus is so good and a fatal outcome for advanced carcinoma of the uterus, regardless of treatment, is so sure that the greatest hope for reducing the apparently increasing cancer rate seems to lie in more frequent routine examinations by the family physician, the prevention and eradication where possible, pathologic diagnosis in suspicious cases and in proved cases and the preoperative use of radium and deep roentgen ray, followed in a few weeks by complete radical removal of the uterus and parametrium.

Extensive Loss of Skin.—Sproat's patient suffered from avulsion of the entire scrotum, skin and subcutaneous tissues on the penis, abdomen and left side, with testes entirely denuded, and lying on the abdomen. The patient had been caught in the live rollers of a mill. Extensive plastic surgery was resorted to, with a good recovery.

Colorado Medicine, Denver

22: 331-362 (Oct.) 1925

Biologic View. G. A. Boyd, Colorado Springs.—p. 333.
Colorado Psychopathic Hospital: Community and State Wide Functions. F. G. Ebough, Denver.—p. 339.
Extreme Respiratory Paralysis Following Caudal Anesthesia. D. C. Elliott, Denver.—p. 344.
Ulceration of Colon Caused by Endameba Histolytica. A. J. Chisholm, Denver.—p. 346.
Persistent Posterior Position. G. L. Monson, Denver.—p. 351.
Allergic Epilepsy: Familial Type. C. Eastlake, Denver.—p. 353.
Removal of Spleen. R. B. Porter, Glenwood Springs.—p. 355.

Journal of Industrial Hygiene, Baltimore

7: 433-480 (Oct.) 1925

Impressions of Visit to United States. D. R. Wilson, London, Eng.—p. 433.
Effective Method for Conducting Experiments on Dust Inhalation. C. K. Drinker, P. Drinker and K. R. Drinker, Boston.—p. 440.
Skin Diseases; Their Industrial Applications. C. G. Lane, Boston.—p. 444.
Manufacture and Repair of Electric Accumulators. C. W. Price and J. C. Bridge, Boston.—p. 451.

Journal of Nervous and Mental Disease, New York

62: 337-448 (Oct.) 1925

*New Diagnostic Symptom for Recognition of Idiopathic Epilepsy in Its Interparoxysmal Period. L. Focher, Budapest, Hungary.—p. 337.
Flexion Paralysis of Spinal and Cerebral Origin. A. Gordon, Philadelphia.—p. 354.
Stammering as a Neurosis. M. S. Gregory, Dighton, Kan.—p. 371.
*Gentian Violet Intravenously in Chorea and Encephalitis. J. W. Visher, Waukesha, Wis.—p. 376.

Diagnostic Symptom of Idiopathic Epilepsy.—Focher has observed that some epileptics show such an asymmetry to Weber's *tactile sensibility* as he had not seen except in patients suffering from organic nerve disorder. Asymmetry, which overflows the bounds of normality found in sound persons, has never been found in persons suffering from a functional disease but only in those suffering from organic nerve disorder or idiopathic epilepsy. This symptom has not always the same significance and its origin can be explained in three ways: It may be the sole symptom of cortical epilepsy occasioned by a focus in the cortex: It may be a manifestation of an asymmetrical development of the cerebrum which might be the constitutional condition of idiopathic epilepsy itself. It may be the symptom of a secondary change in the cortex, caused by those physiologic changes which are associated in idiopathic epilepsy with the mechanism of convulsions and may become settled after some recurrences of attacks. From the point of view of the diagnosis, in from 25 to 30 per cent. of epileptics it gives a rapid diagnosis without observation and without the provocation of a fit.

Gentian Violet in Encephalitis.—Three cases of encephalitis following typhoid fever and one case of chorea with endocarditis are reported by Visher in which prompt recovery followed the intravenous administration of gentian violet. No change was made in other medication or management, so that the drug seemed responsible for the decided improvements in each case.

Journal of Radiology, Omaha

6: 389-430 (Oct.) 1925

*Psoriasis Treated Roentgenologically. J. O. Parker, Owosso, Mich.—p. 389.
High Frequency Treatment. O. T. Cruickshank, Pittsburgh.—p. 393.
Gamma Ray in Science. C. C. Moyar, Pittsburgh.—p. 400.
Radium in Dermatology. A. S. Clark, N. Y.—p. 403.

Roentgen-Ray Therapy of Psoriasis.—Parker asserts that complete cure in 85 per cent. of cases of psoriasis can be had by the employment of the roentgen ray alone, provided the patient acquiesces to our demands. A general stimulation of the organic functions during and following the course of treatments may be expected. Succeeding generations will not suffer from induced malformations, when guarded dosage is employed.

Kansas Medical Society Journal, Topeka

25: 319-356 (Oct.) 1925

Preliminary Report of Personal Experiences with Spinal Anesthesia. L. F. Barney, Kansas City.—p. 319.
Diagnosis of Gallbladder Disease. E. E. Morrison, Great Bend.—p. 327.
After-Sanatorium Care of Arrested Cases of Tuberculosis. R. G. Breuer, Norton.—p. 330.

Kentucky Medical Journal, Bowling Green

23: 461-500 (Oct.) 1925

Congenital Cleft of Lip and Palate. L. Kahn, Louisville.—p. 491.
Skin Grafting (Skull); Case. J. D. Northcutt, Covington.—p. 493.

Michigan State Medical Society Journal, Grand Rapids

24: 513-566 (Oct.) 1925

Hospital and Public. W. A. Evans, Chicago.—p. 516.
Transfusion of Unmodified Blood; New Instrument. H. E. Moore, Detroit.—p. 521.
Serologic and Clinical Survey of Kahn Precipitation Test. E. T. Schuren, Detroit.—p. 525.
Comparative Study of 100 Subtotal Thyroidectomies from Single Goiter Zone. S. Levin, Houghton.—p. 527.
"Those Good Old Times," as Seen by a Physician. J. G. R. Manwaring, Flint.—p. 534.

Military Surgeon, Washington, D. C.

57: 337-448 (Oct.) 1925

Medical Department in Battle at Sea. E. R. Stitt.—p. 341.
Genesis of American Ambulance Service with French Army, 1915-1917. A. P. Andrew.
Tonsillectomy During Active Tonsillitis. R. E. Cloward.—p. 378.
Heliotherapy in Tuberculosis. C. E. H. Bruns.—p. 382.
Treatment of Malarial Fever. A. T. Cooper.—p. 392.
Some Problems of Ventilation in U. S. Army. C. Le Baron, Jr.—p. 397.
Cushing's Life of Osler. F. A. Winter.—p. 410.

Minnesota Medicine, St. Paul

8: 615-652 (Oct.) 1925

Subacute Bacterial Endocarditis. H. L. Ulrich, Minneapolis.—p. 615.
Corrective Legislation. F. M. McLucas, Ft. Wayne, Ind.—p. 618.
American Association for Medical Progress. J. A. Myers, Minneapolis.—p. 625.
Bone Tumors. H. W. Meyerding, Rochester, Minn.—p. 628.
Treatment of Acute Appendicitis. T. Bratrud, Warren.—p. 634.
*Production and Healing of Peptic Ulcer. F. C. Mann, Rochester.—p. 638.
Perforated Ulcer. J. S. Holbrook, Mankato.—p. 640.

Experimental Peptic Ulcer.—A method is described by Mann for the production of a lesion in the dog which resembles in most particulars peptic ulcer in man. The essential procedure is to drain the contents of the duodenum into the ileum at a considerable distance from the point of emergence of the acid from the stomach. Following this procedure, a typical peptic ulcer developed in a high percentage of experiments; it usually developed within a month or two after operation and always in the jejunal mucosa just distal to the suture line, usually slightly posterior and to the right. If the ulcer is protected from the gastric juice coming in contact with it, healing is complete and remarkably rapid.

Missouri State Medical Association Journal, St. Louis

22: 387-416 (Oct.) 1925

Tryparsamide Therapy in Neurosyphilis. A. L. Skoog, Kansas City.—p. 387.
*Hemochromatosis. D. F. Manning, Marshall.—p. 390.
Inguinal Hernia. R. A. Woolsey, St. Louis.—p. 393.
Changes in Chest Wall in Tuberculosis. W. A. German, Kansas City.—p. 395.
Radiation of Thymus in Infantile Eczema. J. P. Costello, St. Louis.—p. 398.
*Carcinoma of Spleen. A. S. Welch, Kansas City.—p. 399.
Ether Anesthesia. Relation of Plane of Anesthesia to Circulatory Depression; Surgical Technic. R. M. Waters, Kansas City.—p. 401.

Hemochromatosis.—The family and personal history in Manning's case was negative, except that in October, 1922, the patient went on a two weeks' fishing expedition. During that period he drank about one pint of "corn whisky" daily. About a month thereafter he became rather deeply jaundiced, the jaundice lasting in variable degrees for several weeks. He did not feel badly, however, and had little or no digestive disturbance during the time; but his bowels were rather obstinately constipated, a condition he had not experienced before. Six months later, a feeling of discomfort in the upper abdomen, "a heaviness or weight," as he expressed it, developed, with a noticeable decline in strength, particularly in the legs. On examination it was evident that the skin on his face and hands was abnormally dark, being of a bluish-gray color, shading to a dark tan, and was dry and somewhat scaly. The liver was distinctly enlarged but smooth and extended well below the costal border. The spleen was not palpable, and percussion revealed no enlargement. The heart and lungs were normal, as also were the superficial and deep reflexes. The blood picture was: red cells 4,600,000, leukocytes 7,200, hemoglobin 90 per cent., with the differential count showing no change in the relative percentages. Glycosuria was a terminal symptom. A necropsy was held, and the report is given.

Secondary Carcinoma of Spleen.—Welch reports a case of carcinoma of the spleen secondary to carcinoma of the prostate gland.

Nebraska State Medical Journal, Omaha

10: 365-408 (Oct.) 1925

Gallbladder Disease. C. F. Andrews, Lincoln.—p. 365.
Appendico-Biliary Syndrome. M. Emmert, Omaha.—p. 370.
How Mortality May Be Reduced in Operations on Gallbladder and Gall Ducts. J. E. Summers, Omaha.—p. 373.
Modern Aspects of Nutrition, Pathology of Malnutrition. V. E. Levine, Omaha.—p. 379.
Radium in Urology. E. E. Angle, Lincoln.—p. 392.
Phases of the Tuberculosis Problem. J. F. Allen, Omaha.—p. 388.
Why I Dispense My Own Drugs. M. J. Breuer, Lincoln.—p. 395.
Bacterin Treatment of Pertussis. S. A. Swenson, Oakland.—p. 397.
Unusual Treatment of Ectopic Pregnancy. M. J. Breuer, Lincoln.—p. 401.

New Jersey Medical Society Journal, Orange

22: 367-406 (Oct.) 1925

Acute Diverticulitis of Colon. J. F. Erdmann, Atlantic City.—p. 376.
Conduct Disorders in Children. F. H. Leavitt, Philadelphia.—p. 383.

New Orleans Medical and Surgical Journal

78: 191-258 (Oct.) 1925

Constipation and Intestinal Toxemia. J. S. McLester, Birmingham, Ala.—p. 191.
Relation of Surgeon to Family Physician. R. C. Kemp, Baton Rouge.—p. 199.
Primary Sarcoma of Intestines; Case. F. I. Loria, New Orleans.—p. 201.
Postoperative Infections of Abdominal Wall. H. A. Gamble, Greenville, Miss.—p. 208.
Findings of 733 Consecutive Urologic Cases. H. W. E. Walther and C. L. Peacock, New Orleans.—p. 213.
Treatment of Obstructive Jaundice. S. H. Hairston, Meridian, Miss.—p. 219.
Dental Roentgenogram. W. A. Lurie, New Orleans.—p. 221.
Technic for Ethmoidectomy. J. R. Hume. New Orleans.—p. 227.
Some Practical Observations of Gallbladder Disease. C. J. Miller, New Orleans.—p. 228.
Conservative Treatment of Eclampsia. E. L. King, New Orleans.—p. 232.
Chronic Appendix. C. T. Chamberlain, Natchez, Miss.—p. 239.
Unrecognized Pellagra; Serious Surgical Handicap. L. B. Hudson, Hattiesburg, Miss.—p. 242.

Northwest Medicine, Seattle

24: 469-526 (Oct.) 1925

Development of State Society. A. C. Kinney, Astoria, Ore.—p. 469.
Nephritis. McKim Marriott, St. Louis.—p. 472.
Surgery of Galltracts. R. C. Coffey, Portland, Ore.—p. 479.
Sympathectomy in Treatment of Spastic Paralysis. H. E. Coe, Seattle, Wash.—p. 486.
More About Parasitic Origin of Malignant Epithelial Growths. M. J. Scott, Butte, Mont.—p. 492.
Tetratoma Testis; Two Cases. A. B. Helper, Seattle, Wash.—p. 499.
Ductless Gland Disease; Physiotherapy. H. Lisser, San Francisco.—p. 503.

Occupational Therapy and Rehabilitation, Baltimore

4: 311-406 (Oct.) 1925

Relation of Education to Mental Disorders. M. J. Saunders, Baltimore.—p. 311.
Motivation of Social Interest. J. P. Kelleher, Wards Island, N. Y.—p. 365.
Bringing World of Nature to Mental Defective. F. B. Wilson, Syracuse, N. Y.—p. 373.
Motivation of Occupational Work in Mental Hospitals. E. F. Humphrey, Boston.—p. 379.

Oklahoma State Medical Association Journal, Oklahoma City

18: 229-252 (Oct.) 1925

Treatment of Pulmonary Tuberculosis by Intravenous Injections of Mercurochrome. B. A. Hayes, Oklahoma City.—p. 228.
Diagnosis of Tuberculosis in Early Life. W. M. Taylor, Oklahoma City.—p. 233.
Value of Artificial Pneumothorax in Treatment of Pulmonary Conditions. L. J. Moorman, Oklahoma City.—p. 235.
Renal Tuberculosis. J. W. Rogers, Tulsa.—p. 237.
Some Important Features in Treatment of Fractures. F. S. Clinton, Tulsa.—p. 238.

Public Health Journal, Toronto

16: 401-450 (Sept.) 1925

Value of Social Hygiene to Community. G. Bates.—p. 401.
*Maternal Mortality in Canada. H. MacMurchy.—p. 410.
Outline of Preventive Medicine. L. A. Pequegnat.—p. 417.
on Between Mental and Social Hygiene. C. M. Hincks.—p. 422.
New Conception of Duties of Sanitary Inspector. E. W. J. Hague.—p. 426.

Maternal Mortality in Canada.—In 1922, the total population of Canada was 8,954,949. The total number of births was 252,571. The maternal mortality in childbirth was 1,248. The infant mortality under 1 year was 25,553.

Radiology, St. Paul

5: 275-364 (Oct.) 1925

*Roentgen-Ray Treatment of Advanced Cancer. E. T. Leddy and J. L. Weatherwax, Philadelphia.—p. 275.
Treatment of Carcinoma of Lower Jaw. F. M. Johnson, Atlanta, Ga.—p. 280.
*Rôle of Radiation in Treatment of Cancer of Breast. U. V. Portmann, Cleveland.—p. 286.
Radiation Treatment of Cancer of Rectum. T. E. Jones, Cleveland.—p. 306.
*Obstruction of Esophagus. J. D. Osmond, Cleveland.—p. 312.
Radioactive Substances and Their Therapeutic Uses and Applications. Radiotherapy of Cancer of Uterine Cervix. J. Muir, New York.—p. 322.
Radiologic Retrospect. A. Soiland, Los Angeles.—p. 328.
Treatment of Carcinoma of Body of Uterus. L. J. Stacy, Rochester, Minn.—p. 331.
Cooperation Among Roentgenologists. E. C. Jerman, Chicago.—p. 339.
Primary Carcinoma of Trachea. K. S. Davis, Los Angeles.—p. 342.
Value of Radium in Recurrent Carcinoma of Breast. W. Neill, Jr., Baltimore.—p. 343.
Fracture of Humerus: Nonunion. H. B. Podlasky, Milwaukee.—p. 344.
Advantage of Rigid Films of Various Sizes in Radiographing the Mouth. J. A. Blue, Birmingham, Ala.—p. 346.

Roentgen-Ray Treatment of Advanced Cancer.—Leddy and Weatherwax advise that cases of advanced cancer should receive roentgen-ray therapy, not with the idea of producing a cure but only of producing palliation. It seems most reasonable to use irradiation in this advanced group merely to produce, possibly, a slowing-down of the malignant process by checking the activity of the tumor cells, by inducing tissue reactions to combat them, and, at the same time, by using other means to build up the patient's resistance so that the tumor, for the time being, may be rendered innocuous.

Radiotherapy of Breast Cancer.—This review by Portmann tends to emphasize the fact that studies based on three-year "cures" are of no comparative value. Postoperative intensive irradiation, especially when administered in large doses, is hazardous and increases the percentage of recurrences and metastases. Since it is recognized that irrdiation may devitalize or destroy certain malignant cells, radiologists must study the technical problems involved in the administration of roentgen rays in order to determine the most advantageous methods for their application to breast cancer. The natural resistance of the patient must not be destroyed but must be enhanced.

Obstruction of Esophagus.—Although about 60 per cent. of esophageal obstruction is due to carcinoma, Osmond says the other 40 per cent. can be cured. Benign stenosis will go on to complete obstruction if allowed to remain untreated. Even a cardiospasm will cause death from prolonged lack of water and nourishment. A roentgen-ray examination should be made in every case of dysphagia. If the diagnosis is not made at the first examination, repeated examinations should be made at intervals of two or three weeks. An invisible foreign body must be excluded as a cause of dysphagia. A careful roentgen-ray examination of the esophagus should be made in the case of all patients referred for gastro-intestinal study, if there is a complaint of high epigastric pain.

Rhode Island Medical Journal, Providence

8: 161-176 (Oct.) 1925

Extensive Septic Process Originating in Lingual Tonsil. F. M. Adams, Providence.—p. 161.
Use of Laboratory in Practice of Medicne. H. E. Smiley, Providence.—p. 165.

Southern Medical Journal, Birmingham, Ala.

18: 707-776 (Oct.) 1925

*Effect of Dimethyl-Guanidin-Sulphate on Capillaries. I. S. Barksdale, Greenville, S. C.—p. 707.
Bacteriologic Findings in Acute Dysentery in Children. G. F. Klugh, Atlanta, Ga.—p. 709.
Diagnosis of Early Carcinoma of Stomach. A. A. Gilbert, Fayetteville, Ark.—p. 711.
Fundamental Principle of Roentgen-Ray Therapy. J. W. Pierson, Baltimore, Md.—p. 715.
*Meningeal Form of Epidemic Encephalitis. W. B. Martin, Norfolk, Va.—p. 718.
Encephalitis: Two Cases. C. S. Holbrook, New Orleans, La.—p. 721.
Neurosyphilis. L. M. Gaines, Atlanta, Ga.—p. 723.
Relationship of Dermatology to Internal Medicine. J. C. Michael, Houston, Texas.—p. 727.
Suggestions in Treatment of Skin Conditions. I. R. Pels, Baltimore.—p. 732.
Large Intestine and Nervous System. T. A. Williams, Washington, D. C.—p. 732.
Epidemiology in Relation to Medical Profession. F. M. Register, Raleigh, N. C.—p 736.
Treatment of Ununited Fractures. D. Eve, Nashville.—p. 738.
Open Operation of Fractures with Special Reference to Joint Fractures. E. T. Newell, Chattanooga, Tenn.—p. 740.
Gas Gangrene Complicating Compound Fractures. G. E. W. Hardy, Tampa, Fla.—p. 743.
Subluxation of Navicula: Case. W. Langsford, Oklahoma City.—p. 749.
Congenital Absence of One Kidney: Two Cases. A. E. Goldstein, Baltimore.—p. 750.
*Treatment of Syphilitic Expectant Mother. E. R. Hall, Memphis.—p. 757.
Railway Surgeon and Injured Employee. B. H. Minchew, Waycross, Ga.—p. 761.
Problems in Management of Congenital Cataracts. V. M. Hicks, Raleigh, N. C.—p. 765.

Effect of Dimethyl-Guanidin-Sulphate on Capillaries.—In reviewing the findings of Major and Stephenson, it seems plausible to Barksdale that the guanidin bases are in part or wholly responsible for the cause of the hypertension which is so often concomitant with nephritis. Furthermore, having shown that dimethyl-guanidin-sulphate injected into the frog, pigeon and rabbit produces a prompt and marked constriction of the blood capillaries of these animals. Barksdale offers an explanation that there is more or less sudden increase in the peripheral resistance which in turn calls for an increase in heart action so as to overcome this resistance. If the guanidin retention theory holds, then it will be possible to treat arterial hypertension successfully by treating the cause, that is, by finding some means whereby this guanidin may be destroyed in the body, in view of the fact that the kidney cells have lost their power of excreting it. That guanidin constricts the capillaries is a fact; that its retention and constricting action on the capillaries are the cause of clinical hypertension is a theory which may be accepted or rejected.

Meningeal Form of Epidemic Encephalitis.—Martin reports three cases of meningitis which clinically and from a laboratory standpoint resembled each other rather closely. From an analysis of these cases he is inclined to consider them as instances of a meningitis due to the same virus that causes *epidemic encephalitis. They represent a practically pure meningitis type with practically no evidence of accompanying encephalitis.*

Treatment of Syphilitic Expectant Mother.—Hall believes that by educating and treating the expectant syphilitic mother more can be accomplished toward eradicating syphilis than by any other means. Wassermann examinations should be *made on all pregnant women.* Next to a Wassermann test, the history of a previous abortion, miscarriage, stillbirth or living syphilitic child is the most valuable sign. In only about 18 per cent. of cases detection is aided by previous personal history or clinical signs. Arsphenamin and neoarsphenamin are the drugs of choice. Every syphilitic expectant mother should be treated with arsphenamin or neoarsphenamin. Treatment is most effective when given early in pregnancy. All patients in this series having a syphilitic child started treatment after the sixth month of pregnancy. A small amount of treatment early in pregnancy will often result in a healthy child. The same amount given before conception will in most cases result in a syphilitic child.

United States Naval Medical Bulletin, Washington, D. C.

23: 187-328 (Sept.-Oct.) 1925

Lead Poisoning Among Oxyacetylene Welders in Scrapping of Naval Vessels. E. W. Brown.—p. 187.
Combined Methods of Treating Malignant Disease. L. W. Johnson.—p. 218.
*Yeast Cell Infection (Torulosis) in Man. J. E. Miller.—p. 229.
Provocative Reactions in Primary Syphilis. G. F. Cooper.—p. 236.
*Hookworm Disease in Naval Recruits. O. Wildman and N. S. Betts.—p. 241.
New Bedside Treatment and Dressing Tray. P. R. Stalnaker.—p. 248.
Observations on Annual Physical Examinations at Naval Operating Base, Hampton Roads, Va. M. E. Higgins, F. Ceres and O. Wildman.—p. 253.
*Case of Masked Appendicitis. J. F. Hays.—p. 255.

Torulosis of Nervous System.—Miller reports what he considers to be a case of torulosis of the nervous system. Chief complaints on admission were prolonged weakness, marked loss of weight, excruciating headache prior to admission, and pain in arms and legs that dated back for a period of five or six weeks, *although the patient had been failing in health* for two or three months. The man, aged 54, was admitted to the hospital with the diagnosis of senile dementia. He died four weeks after admission from profound asthenia. He was conscious up to the time of death and had never been in coma. Toward the end constant delirium was present. Necropsy revealed bilateral obliterative pleurisy and partial collapse of the lower right lung. A few hard nodules were present in both apexes. All other organs were normal, with the exception of the brain, which revealed the presence of seven small brownish and rounded tumors. The membranes were thickened and adherent. Moderate sclerosis of both hemispheres was present. One small, pea-sized tumor was found on the lateral wall of the right ventricle, extending into the ventricular cavity. Another slightly larger tumor was found external to the wall of the ventricle, and five small tumors were found scattered throughout the cerebellum. Histopathologic examination was made of these tumors. The diagnosis was infectious granuloma, and cystic blastomycosis. Section of cerebrum and cerebellum showed numerous irregular cysts filled with yeast cells of the character of cryptococci. No evidence of malignant tumor formation was noted.

Hookworm Disease in Naval Recruits.—Hookworm disease was found in 23.3 per cent. of 15,929 young men from the Southern states, varying in incidence from 4.4 per cent. in Maryland to 43.5 per cent. in Florida. One dose of 3 c.c. carbon tetrachlorid caused the hookworm ova to disappear from the stools in over 96 per cent. of cases.

Masked Appendicitis.—Hays' patient complained of sore throat, chills and fever, headache, pains in his long bones and general malaise. On examination, he was found to have acute follicular tonsillitis. He was put to bed and treated. On the sixth day he began to have pain in the abdomen which seemed to be localized about 1 inch to the right of the umbilicus in an area about the size of a silver dollar. A thorough physical examination revealed nothing pathologic, *and there was no evidence of any intra-abdominal trouble.* This pain lasted for three days, but did not increase in severity. On the fourth day he complained of nausea. The leukocyte count was 10,050. He was complaining of severe abdominal pain, vomiting, headache and restlessness. Examination showed tenderness over the whole abdomen, with spasmodic rigidity on moderately deep palpation. No masses were palpable, and the point of extreme sensitiveness was at the right of the umbilicus. There was no evidence of distention. The diagnosis at this time was apparent, and he was prepared for operation at once. On cutting through the peritoneum a seropurulent fluid which had a very foul odor, typical of that produced by *B. coli,* escaped. The appendix was delivered with difficulty after breaking down and forcing loose numerous adhesions which bound the cecum and ascending colon down tightly. The appendix was gangrenous, it having ruptured close to the tip on its mesial side. Hays is positive that the appendicitis was secondary to the tonsillitis.

Virginia Medical Monthly, Richmond

52: 405-474 (Oct.) 1925

Simple Glaucoma. J. A. White, Richmond.—p. 405.
Pathogenesis and Choice of Operation in Different Types of Glaucoma. W. Zentmayer, Philadelphia.—p. 407.
Surgical Treatment for Hyperthyroidism. R. L. Payne, Norfolk.—p. 411.
Postoperative Care of Thyroid Cases and Some of More Common Complications. C. C. Smith, Norfolk.—p. 415.
Diagnosis in Toxic Thyroid Disease. R. C. Whitehead, Norfolk.—p. 419.
Modern Views on Diseases of Thyroid. J. S. Horsley, Richmond.—p. 424.
Disease of Teeth of School Children. R. T. Somers, Norfolk.—p. 427.
Pyelitis in Pregnancy. J. L. Rawls, Norfolk.—p. 433.
Diabetes and General Practitioner. W. P. Jackson, Roanoke.—p. 437.
*Treatment of Nausea of Pregnancy. M. P. Rucker, Richmond.—p. 441
Food We Ate: Diseases Resulting Therefrom: Rectification [illegible] Hancock, Norfolk.—p. 443.
Alienist and Expert Testimony. S. A. Price, Williamsburg.—p. 449.
Sinusitis. G. B. Trible, Washington, D. C.—p. 454.

Treatment of Nausea of Pregnancy.—Rucker says that vomiting of pregnancy is associated with increased congestion of the cervix. Treatment of the cervical condition relieves the nausea. One often sees the same type of nausea in women *when they have large, congested cervices. The same treatment* relieves their nausea also. Treatment of the mild cases and the early cases lessens the number of cases of the more severe type. The severe type demands energetic hospital treatment, so as to avoid therapeutic abortion.

West Virginia Medical Journal, Huntington

21: 505-560 (Oct.) 1925

Surgical Indigestion a Consideration of Differential Diagnosis. R. B. Miller, Parkersburg.—p. 505.
Agencies That Would Clip Wings of Medical Progress. H. M. Hall, Wheeling.—p. 513.
Ether Intramuscularly in Treatment of Pertussis. G. M. Lyon, Huntington.—p. 523.
Operative Technic of Surgery of Gallbladder. W. St. Clair, Bluefield.—p. 528.
Progress in Treatment of Diseases of Thyroid. C. A. Groomes, Elkins.—p. 533.
Significance of Colloidal Properties of Gelatin in Special Dietaries. T. B. Downey, Pittsburgh.—p. 541.
Acute Pyelitis. E. R. Logan, Omar.—p. 542.
Septic Endocarditis; Report of Case. E. S. Dupuy, Beckley.—p. 544.

Wisconsin Medical Journal, Milwaukee

24: 231-286 (Oct.) 1925

Present Status of Radiotherapy of Malignancies. H. R. Foerster, Milwaukee.—p. 231.
Cataract Operation by Suction, Barraquer Method. S. G. Higgins, Milwaukee.—p. 235.
*Effect of Bone Marrow-Spleen Extrect on Relative Blood Cell Volume in Advanced Pulmonary Tuberculosis. B. H. Schlomovitz, T. S. Roach and B. E. Hedding, Milwaukee.—p. 241.
Recent Advances in Anesthesia. A. Fitzgerald, Madison.—p. 243.
Local Anesthesia of Abdomen. L. W. Hipke, Milwaukee.—p. 245.
Headaches from Systemic and Cranial Standpoint. R. Sonnenschein, Chicago.—p. 248.

Bone Marrow-Spleen Extract in Pulmonary Tuberculosis.—According to Schlomovitz and his associates the administration of spleen and bone marrow betters the blood picture in more than 50 per cent. of the far advanced active cases of pulmonary tuberculosis.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below Single case reports and trials of new drugs are usually omitted

British Journal of Medical Psychology, London

5: 65 160 (Oct) 1925

Neural Substrata of Reflective Thought G G Campion—p. 65
Unwarranted Accretion to Freudian Theory I D Suttie—p 83.
"Synthesis" of Anxiety Neurosis A Wohlgemuth—p 92
Method of Self Analysis E P Farrow—p 106

British Journal of Ophthalmology, London

9: 481 544 (Oct.) 1925

British Masters of Ophthalmology R R James—p 481
Development of Human Iris I C Mann—p 495
Instantaneous Stereophotography of Anterior Section of Eye with Considerable Magnification. A Gala—p 512
Hydrogen Ion Concentration in Vitreous Body of Eye with Reference to Glaucoma A. Gala—p 516
Refraction Associated with Transient Glycosuria A J Ballantyne—p. 519.
Helmholtz' Theory of Accommodation H Hartridge—p 521

British Medical Journal, London

2: 633 678 (Oct. 10) 1925

Treatment of Chronic Arthritis T Horder—p 633
Id II. Preston King. T. Horder—p. 634.
*Toxic Nature of Stroma of Red Blood Corpuscles T C Clare—p 640
Epidemic Encephalitis A. G Robb—p 644
*Encysted Pleural Effusion Containing Cholesterin. E. O A. Singer and E V. Whitby—p 646
*Infected Myoma Complicating Pregnancy H R Spencer—p 647
*Treatment of Rheumatoid Arthritis by Intramuscular Injection of Guaiacol, Iodin and Camphor. S W Smith—p 648
Pulmonary Embolism Following Operation for Cataract T G W Parry—p 649
*Malignant Disease in Native Races. E D Pridie—p. 649
*Ovarian Growth in Abnormally Developed Woman C Snowden and D. E. Campbell—p. 649

Toxic Nature of Stroma of Erythrocytes.—Clare puts forward the hypothesis that the constituents of the stroma of red blood corpuscles, when set free into the circulation by the destruction of the cell, have a toxic character and must be regarded as a factor in many diseases. He also gives an account of a method of treatment based on this hypothesis and designed to immunize the body against this cellular toxin The method has been tried in cases of tuberculosis of the urinary tract unsuitable for surgical treatment and persistent urticaria, with favorable results

Cholesterin in Pleural Effusion.—No cause was discoverable in the case reported by Singer and Whitby to account for the presence of the cholesterin in the pleural fluid. The effusion was encysted, and there was no apparent connection with the liver. In spite of a very considerable effusion there was no displacement of the heart

Infected Myoma Complicating Pregnancy.—In this case, Spencer says, the tumor could have been removed easily by myomectomy, but the infection of the tumor would have rendered myomectomy or simple cesarean section a dangerous operation Therefore, the cesarean section was followed by total abdominal hysterectomy

Treatment of Rheumatoid Arthritis.—The result of the intramuscular injection of guaiacol, iodin and camphor dissolved in oil has been satisfactory to Smith in nine cases of rheumatoid arthritis and articular fibrositis, other than the postinfective, gouty and gonorrheal forms The cases represented each phase of the disease from the early and the subacute to the rigid and deformed chronic case Of the nine patients, four had had carefully prepared autovaccine administered during many months, with little apparent benefit. All had had the various other methods of treatment usually employed. In one case the use of the combined oil was eminently satisfactory. Three other patients reported definite steady relief, and showed decided improvement in greater freedom from attacks, in diminished pain, and in being able to move about more easily In another case the result is reported as being good. The remaining four patients declared slight benefit after a short course of injections Smith does not suggest that the oil will displace vaccine or other treatment, but rather that it should be employed along with those other general and local means commonly used The highest dose given at any one time was 1 c c., repeated every third day, or, when thought necessary, every second day. Each dose contains 10 per cent. guaiacol, 10 per cent iodin and 5 per cent camphor in oil. The name of the oil used is not mentioned The injecion is made into the gluteus muscle, or, better still, deeply into the vastus externus about the middle of the thigh.

Malignant Disease in Sudanese.—Pridie says that among the primitive Hadendowa tribes (Fuzzies) of the Sudan, malignant disease is very rare During the last twelve months he has seen in the whole province two cases—one of epithelioma of the vulva, and the other of a malignant parotid tumor. Among Sudanese natives generally, in the Red Sea province, the commonest form of carcinoma is cancer of the breast Simple tumors, particularly lipoma and fibroma, are fairly common. These tribes live an isolated life scattered over a wide area in dry desert country rising to a maximum of 6,000 feet in the hills along the Red Sea coast They subsist principally on the milk of the camel, goat, sheep, or cow, supplemented by a small amount of millet and meat The milk is drunk cold, and the millet and meat cooked Constipation is very prevalent They practice circumcision Deficiency diseases are practically unknown, and diseases particularly aggravated by insufficient diet rare

Ovarian Growth with Anatomic Anomalies.—In the case reported by Snowden and Campbell, the uterus and left ovary were present only as rudimentary bodies showing no trace of development; the left broad ligament was undeveloped and no fallopian tube could be felt on that side Otherwise the genitalia were normal The woman had never menstruated. The removed right ovary weighed nearly 6 pounds (27 kg).

Journal of Hygiene, London

24: 111 240 (Oct) 1925

Correlation of Sulphate Reduction Test with Other Tests in Bacteriologic Examination of Water W J Wilson and E M McV Blair—p 111
*Significance of Hemic Plasma Cells in Various Infective Conditions R A Hickling—p 120
Electric Current (Apart from Heat Generated) J M Beattie and F C Lewis—p 123
*Plague and Regulation of Numbers in Wild Mammals C S Elton—p 138
Fermentation Reductase Test for Grading of Milk E R Hiscox and U Starling—p 164
Nonspecific Stimulation of Natural Antibody T J Mackie—p 176
Physiologic and Economic Study of Diets of Workers in Rural Areas as Compared with Those of Workers Resident in Urban Districts A. B Hill—p 189

Hemic Plasma Cells in Measles and Scarlatina.—Hickling states that the blood picture in rubella is characterized by the presence of numerous plasma and Turk cells and by the absence of toxic changes in the neutrophilic leukocytes Plasma cells occur also in scarlatina and in measles, but with less regularity and, as a rule, in smaller numbers, but these diseases are always associated with "toxic" changes in the neutrophilic cells

Plague in Mammals.—A short account is given by Elton of the occurrence of plague epidemics in wild mammals other than "domestic" rats and mice The method by which most rodents regulate their numbers is as follows. increase in numbers over several years up to a point at which an epidemic of some sort occurs, which kills off a large proportion of the population Increase then takes place again, and is followed by another epidemic, and so on indefinitely. These periodic fluctuations are probably controlled by widespread climate fluctuations, the best evidence for this being that in certain cases the former run synchronously in widely separated countries. There appears to be a dominant short period in fluctuation of from three to four years, and a larger movement of period from ten to eleven years, both in North America and Europe The fact that the eleven year sunspot cycle roughly corresponds with the larger movement is significant. The data available from eastern Asia suggest that there, too, small mammals fluctuate periodically in numbers, and with similar periods to those of North America and Europe There is also some evidence that the maximum of the ten to eleven year fluctuations coincide in eastern Asia and in North America, just as those of the three to four year period coincide in northern Canada, Greenland and Norway.

Evidence is given that the plague marmot (*Arcyomys bobac*), and other rodents carrying plague, are liable to these fluctuations. If this proves to be true, it may be possible, when fuller data are available, to forecast with some accuracy the years of epidemics among these animals, and if this can be done we shall have some means of gaging the likelihood of the occurrence of plague outbreaks in the human population of those regions. The available data are admittedly fragmentary, but it is probable that between the years 1931 and 1934 epidemics among *A. bobac* in Transbaikalia and Mongolia will be severe, and that these events will lead to an increase of plague mortality in man.

Journal of Laryngology and Otology, Edinburgh

40: 633-693 (Oct.) 1925

- Mastoid Emissary Vein; Surgical Importance. A. H. Cheatle.—p. 633.
- *Tracheotomy in Tuberculous Laryngitis. T. R. Rodger.—p. 639.
- *Condition of Accessory Sinuses in Lethargic Encephalitis. A. L. Yates.—p. 646.
- Tonsil Hemostatic Forceps. R. G. Brown.—p. 650.

Tracheotomy in Tuberculous Laryngitis.—Rodger emphasizes the point that one must be prepared to do tracheotomy in tuberculous laryngitis as in any other form of laryngeal obstruction, if the patient cannot breathe freely. It may also be wise to resort to the operation if the patient proves unable to conform to the rule of strict silence. In most other cases, however, the enforcement of complete voice rest, with the judicious use of the cautery and conservative measures, probably offers a good hope of recovery.

Accessory Sinuses in Epidemic Encephalitis.—Yates asserts that the treatment of the nasal condition in epidemic encephalitis by eucalyptol paraffin is worth a trial, because it cannot possibly do any harm, and in those cases in which it has been tried it has appeared to be beneficial. In cases in which the disease is no longer acute but is slowly progressing, the washing out of the sphenoidal sinuses and filling them with eucalyptol paraffin appears in some cases to effect a marked improvement in some of the symptoms; it has no effect whatever on the chronic movements of the parkinsonian type of the disease, or on patients who have suffered from epidemic encephalitis for a prolonged period.

Journal of Obstetrics and Gynaecology of British Empire, Manchester

32: 433-648, 1925

- *Osteomalacia in China. J. P. Maxwell and L. M. Miles.—p. 433.
- *Diagnosis of Syphilis as Cause of Still-Birth. J. F. Taylor and J. Forest-Smith.—p. 474.
- Neuromusculature of Uterus. F. Cook.—p. 487.
- *Absorption from Human Vagina. G. D. Robinson.—p. 496.
- Investigation of Uterus Fallopian Tubes by Air and Opaque Bodies in Sterility. S. Forsdike.—p. 505.
- *Changes Blood Undergoes in Pregnancy and After, Their Responsibility for Toxemias and Their Treatment. J. E. R. McDonagh.—p. 512.
- Statistical Enquiry into Clinical Features of Extra-Uterine Adenomyomata. A. Donald.—p. 529.
- Authority and Scepticism in Midwifery and Diseases of Women. T. Wilson.—p. 534.
- Normal Labor After Removal of Twenty-Three Fibroids by Myomectomy. W. F. Shaw.—p. 550.
- Abdominal Pregnancy, Secondary to Tubal Gestation at Term. J. A. Kynoch.—p. 546.
- Band, Formed from Obliterated Artery, Stretching from Mesentery of Ileum to Abdominal Wall and Transfixing the Omentum. W. F. Shaw.—p. 551.
- Solid Malignant Tumor of Ovary in Girl Aged 15, Associated with Pregnancy. V. B. G. Armytage.—p. 553.
- Case of Intracranial Hemorrhage in New-Born Child After Normal and Easy Labor. S. A. McSwiney.—p. 557.

Osteomalacia in China.—Maxwell and Miles assert that China is at present one of the world centers for the study of osteomalacia inasmuch as the incidence is from 1 to 3 per cent. of child-bearing women. By improving the diet and supplying cod liver oil, it should be possible in due time to stamp the disease out.

Syphilis as Cause of Stillbirth.—In making a diagnosis of syphilis in the stillborn when spirochetes have not been found in the tissues or when it is not practicable to search for spirochetes, the following points, according to Taylor and Forest-Smith, are in favor of syphilis: (*a*) enlargement of the spleen; (*b*) presence of chondro-epiphysitis, and (*c*) a positive Wassermann reaction in the mother. Against syphilis are these points: (*a*) no maceration of the fetus, and (*b*) the fetus reaching full time.

Absorption from Human Vagina.—Robinson presents positive experimental evidence that potassium iodid and sodium salicylate are rapidly absorbed and are found in the urine one hour after being placed in the vagina. Also that quinin, cane sugar and phenol red are absorbed from the vagina and excreted by the kidneys, though not so rapidly as the abovementioned salts. In the case of glucose, it seems probable that absorption occurs, but that oxidation takes place so rapidly that detection is impossible. Methylene blue is apparently not absorbed, or absorbed only in very minute quantities. There is clinical evidence that quinin is absorbed.

Blood Changes in Pregnancy.—The toxemias of pregnancy and of the puerperium, McDonagh says, are due to the physical changes the protein particles in the plasma undergo. The protein particles are subjected to dehydration. When simple, some of the protein particles merely part with their absorbed constituents (electricity, salts, sugar, amino-nitrogen and fat) and go into true solution. But, when severe, their number either increases so much as to occasion gelation or else they increase in size, agglutinate and become precipitated. The changes the protein particles in the plasma undergo in pregnancy and in the puerperium are not specific. They may be encountered in infections and in other intoxications. Anesthetics may produce identical changes, and the changes responsible for eclampsia are the same as those causing uremic and diabetic coma.

Lancet, London

2: 791-846 (Oct. 17) 1925

- Research in Medical Services. W. B. Leishman.—p. 791.
- Toxic Effects of Lead Administered Intravenously. W. B. Bell.—p. 793.
- *Gastrojejunal Ulcer. A. J. Walton.—p. 800.
- Value of Soft Ray Technic in Pulmonary Radiography. B. Hudson.—p. 805.
- *Chronic Endocervicitis: End-Results of Operation. J. W. Burns.—p. 806.

Postoperative Gastrojejunal Ulcer.—Walton has had under his care twenty cases of gastrojejunal ulcer, eleven of them patients on whom he personally operated. These eleven cases occurred in a total of 783 gastric and duodenal ulcers which had been subjected to operation, giving a percentage of 1.4. Gastro-enterostomy alone was performed in 631 of these cases, so that the danger of this ulcer formation after simple gastro-enterostomy may from this group be estimated at 1.7 per cent. These figures show further that the lesion is common only after duodenal and pyloric ulcers; in fact, of the eleven cases only one occurred after a lesser curve ulcer. Considering the pyloric and duodenal ulcers alone, that is, the group that is most favorably placed for the onset of this complication, there are ten anastomotic ulcers in 417 cases, a percentage of 2.4, which may be regarded as the highest incidence. Walton concludes, therefore, that the frequency of this condition does not warrant the introduction of extensive operations for the treatment of the primary condition. As a general rule, the ulcer is found when the acidity after the primary gastro-enterostomy persists, this possibly being due to an anatomic variation in the distribution of the oxyntic cells in the stomach. The symptoms of this complication, although slight at first, nearly always begin immediately after the primary operation. The frequency of the condition will probably be diminished by performing the anastomosis rather higher up than usual. The treatment of the established condition should be by partial gastrectomy, which will be aided by placing the stoma rather more remote from the flexure than is the custom at the first operation.

Operation for Chronic Endocervicitis.—A review of ninety-two cases has convinced Burns that the operative treatment of chronic endocervicitis brings about a rapid and permanent cure. As the chronically inflamed portion of the cervix is removed by this method, what may be a potentially malignant area is destroyed. By rapidly decreasing the cervical discharge, which is always excessive in these cases, the vaginal exudation is allowed to resume its normal acid protective quality. This is most important from a bacteriologic point of view. The operative treatment described has little or no effect on conception, pregnancy or labor.

Annales de l'Institut Pasteur, Paris

30: 717-788 (Sept.) 1925

*The Bacteriophage Question. J. Bordet.—p. 717.
*Serologic Tests in Tuberculous Dogs and Cats. A. Urbain.—p. 764.
*Meningitis Due to Pfeiffer's Bacillus. Urech and Schnyder.—p. 769.
Rabies Virus in French China. J. Bablet.—p. 783.

Nature of the Bacteriophage.—Bordet argues that the bacteriophage is not a living virus but a lytic substance produced by the bacteria themselves. His present conclusion is based on his five years' study of this transmissible autolysis of bacteria. He regards the autolysis as the result of the elaboration of a lytic substance and assumes that this is a normal physiologic function of micro-organisms. The growth of the bacteria proceeds unimpaired as long as the different lytic substances counterbalance each other or are not elaborated in excess. The lysis power and susceptibility to it vary in different bacteria. A bacterium unaffected by its own lytic principle, may be unable to resist the principle elaborated by another species. The receptivity of the bacterium and the local concentration of the lytic principle determine the number and extent of the areas of the transmissible autolysis. It is possible that analogous substances exert an influence on intercellular relations in higher organisms, contributing to normal functioning of organs, or inducing certain pathologic phenomena.

Fixation Reaction in Diagnosis of Tuberculosis of Dogs and Cats.—Urbain used Besredka's antigen for examination of the serums or pleural effusion from fifty-six tuberculous dogs and cats. The complement fixation reaction was positive in 100 per cent. while the serum from seventy healthy dogs responded negatively in 97.15 per cent. The tuberculin test in thirty-seven tuberculous dogs proved to be positive in 62.1 per cent.; uncertain in 18.9 per cent., and negative in 20 per cent.

Pfeiffer's Bacillus as Factor of Meningitis.—Urech and Schnyder observed within one year seven cases of cerebrospinal meningitis induced by Pfeiffer's bacillus in children, aged from 9 months to 4 years. The bacillus appeared identical with that found in inflammation of the respiratory tract. The prognosis with this meningitis is grave; only one of the children survived, and was left with bilateral deafness.

Archives des Maladies du Cœur, etc., Paris

18: 561-624 (Sept.) 1925

Paroxysmal Heart Block in a Youth. J. J. Beretervide and R. Lopez Ramirez.—p. 561.
Obliteration Process in Arch of Aorta in a Syphilitic. B. Weill-Hallé et al.—p. 569.
*Etiology of Essential Arterial Hypertension and Sclerosis of the Kidney. E. De Nador-Nikitits.—p. 582.

Familial Diathesis in Etiology of Arterial Hypertension.—Nikitis relates a history of twin brothers—one with essential arterial hypertension, the other with hypertension and grave lesions of the kidneys. Both died within a short time, the first from cerebral hemorrhage, the second from uremia. Examination of the remaining six brothers and the father revealed the existence of arterial hypertension in all except two. One of the latter presented, however, some heart disturbance with sclerosis of the peripheral arteries. The author adds that in thirty-two patients with hypertension, the familial predisposition to arterial hypertension could be traced through three generations. The coincidence of sclerosis of the kidneys and hypertension was manifest in a third of the cases.

Archives de Médecine des Enfants, Paris

28: 537-600 (Sept.) 1925

*Radiotherapy Plus Diathermy in Poliomyelitis. H. Bordier.—p. 537.
Growth Deficiency from Avitaminosis. G. Banu and Heresco.—p. 550.
Typhus in Children. A. Mezbourian.—p. 558.
Hypertelorism Craniofacial Deformity. J. Comby.—p. 570.

Roentgen Ray Associated or Not with Diathermy in Treatment of Paralysis from Epidemic Poliomyelitis.—Bordier describes nine new personal cases, thirteen from Turano's experience and one of Bergamini's in which treatment with roentgen rays associated with diathermy was followed by recovery or considerable improvement of the paralysis from acute poliomyelitis in most of the patients. He reiterates that experiments on young animals as well as clinical experiences have demonstrated that irradiation does not cause any damage to the cells of the nerve centers of the spinal cord. This combined radiotherapy and diathermy treatment is effectual not only soon after the febrile phase, but even several months later. The results considerably surpass those from electrotherapy. The technic of the treatment was given in THE JOURNAL, June 20, 1925, p. 1965.

Comptes Rendus de la Société de Biologie, Paris

93: 757-888 (Sept. 30) 1925. Partial Index

Development of Pituitary in Birds. C. Pfeiffer.—p. 761.
Method for Determination of *p*H in Blood. G. Etienne et al.—p. 765.
The Apparent Ventilation of the Lungs. P. Mathieu and R. Etienne.—p. 768.
Embryonic Study of Human Pituitary. Collin and Kissel.—p. 770.
*Follicle Fluid and Menstruation. J. Watrin.—p. 772.
*Anaphylaxis to Wine. V. de Lavergne and P. Florentin.—p. 775.
*Diffusion of Urea in Peritoneal Cavity. Landsberg and Gnoinski.—p. 787.
*Cholesterol of Cerebrospinal Fluid. Garofeanu and Lazar.—p. 791.
*Cholesteremia in Pellagra. I. Ornstein.—p. 793.
Action of Calcium and Potassium on Endocrine Glands. C. Parhon and M. Briese.—p. 795.
*Implanting Ureter in Gallbladder. A. Baidin.—p. 803.
*Implanting Sinus Node in Auricle. P. Rylant.—p. 823.
Centers of Heart Automatism. P. Rylant.—p. 825.
*Influence of Fats on Cancer in Mice. J. Lecloux.—p. 834.
Quantitative Test for Bicarbonate in Serum. Bouckaert.—p. 841.
*Action of Radium on Protozoa. R. Bruynoghe and A. Dubois.—p. 849.
*Radium and Neurotropic Viruses. Bruynoghe and Le Fèvre de Arric.—p. 852.
Size of Erythrocytes in Shock. E. Zunz.—p. 863.
*Immunization Against Rabies. N. Botafogo Gonsalves.—p. 871.
Reflex Secretion of Epinephrin. Houssay and Molinelli.—p. 881.
*Shock in Dethyroidized Dogs. B. A. Houssay and A. D. Cisneros.—p. 886.

Action of Follicle Fluid on Menstruation.—Watrin reports experimental research confirming the vasodilator action of the graafian follicle liquid. One injection of the fluid was given to a defectively menstruating girl. The menstrual flow appeared the next day, six days before the anticipated period.

Case of Anaphylaxis to White Wine.—De Lavergne and P. Florentin observed a case of this kind in a patient with recurring urticaria. An excessive amount of some protein substance added to the grape juice in making the white wine may have produced in it an antigen property, thus responsible for the anaphylactic condition. This was confirmed by the skin reactions in the patient, as well as by experiments on guinea-pigs.

Lavage of the Peritoneum in Animals with Uremia.—Landsberg and Gnoinski injected a liter of Ringer's mixture into the peritoneal cavity of rabbits. After fifteen or twenty minutes the abdominal wall was punctured and the liquid removed. While 82 mg. of urea was found in 800 c.c. of the peritoneal fluid aspirated from rabbits with a normal urea content of the blood, 680 mg. and 352 mg. were found in the fluid from the rabbits with uremia. This lavage of the peritoneum was followed in several of the uremic rabbits by a slight reduction of the blood urea and marked improvement in the general condition. They add that Ganter obtained almost identical results in guinea-pigs with uremia.

Cholesterol Content of Cerebrospinal Fluid During Gestation.—Garofeanu and Lazar examined the cerebrospinal fluid of a large number of women, during pregnancy or in childbed. There were no traces of cholesterol. This confirms the permeability of the vessel walls for crystalloids, such as urea and chlorids, while colloids are not able to pass through the wall.

Cholesteremia in Pellagra.—Ornstein had twenty-five men and ten women under treatment at different stages of pellagra. The cholesterol content of the blood was high in most of the cases. This fact contradicts the theory of suprarenal insufficiency in pellagra. It may be explained by an exaggeration of the cell lipoids in certain organs, and disaggregation of tissues, resembling that in the aged.

Transplantation of the Ureter into the Gallbladder.—Baidin twisted the ureter upward and implanted it in the gallbladder, in three cats. The animals not only survived the operation, but regained gradually their primary weight and showed a normal quantity of blood urea. He concludes from the literature and his own experience that implants of both ureters in the gallbladder should be accomplished in two stages and that it is better to allow a year's interval between the operations. None of the cats died, and all seem to have adapted themselves perfectly to the new physiologic conditions, the same as Dardel's fifth dog, in his similar research.

Grafting of Keith-Flack's Node into the Auricle.—Rylant removed the Keith-Flack node, and implanted it in the tissue of the right auricle, in the same dog. Removal of the node retarded the heart rhythm, and the point of origin of the heart impulse seemed to be shifted to the region of the coronary sinus. The implanted node grew to the auricle tissue, and seemed to control the heart automatism. As all the nerve and muscle connections of the node had been severed, he concludes that the influence of the graft on the heart must be of hormone nature.

Action of Fats on Development of Cancer in Mice.—Lecloux refers to his previous experiments proving the retarding action of injection of oil or petrolatum on the appearance of experimental tar cancer. He is inclined to explain this action by the changes induced by the fat on the diffusion and localization of the diffusible ions.

Action of Radium on Protozoa.—Bruynoghe and Dubois noted that protozoa cultures exposed to the action of radium lost their infectious property. This occurred also in spirochetes. The phenomenon can probably be ascribed to a complete or transient loss by leishmania and trypanosomes of the power of division, rather than to a loss of virulence. The proliferation of the micro-organisms was checked while their motility was unimpaired.

Effect of Radium on Neurotropic Viruses.—Bruynoghe and Le Fèvre de Arric's experiments, conducted on rabbits, testified to the destructive action of radium emanation on the viruses of rabies, encephalitis and herpes zoster. Thus an excessive sensitiveness to radium appears to be a common feature of these three viruses.

Lipovaccine in Immunization Against Rabies.—Botafogo Gonsalves asserts that a dose of rabies virus, lethal in a water vehicle, is without effect on rats when given in an oil emulsion. Rats inoculated with an oil emulsion of the fixed virus became immunized against a lethal dose of the virus, injected ten days afterward.

Anaphylactic and Peptone Shock in Dethyroidized Dogs.—Houssay and Cisneros removed the thyroid gland from thirteen dogs, which were sensitized afterward by injections of horse serum. The animals seemed to be less responsive to anaphylactic and peptone shock than the controls. Changes in metabolism and in the colloid balance of the blood, as well as loss of balance in the vegetative system may be responsible for it.

Presse Médicale, Paris

33: 1313-1328 (Oct. 3) 1925

*Pyodermitis from Habitual Sweating. A. B. Marfan.—p. 1313.
*Preparation of Tuberculosis Antigen. A. Boquet and L. Nègre.—p. 1315.
*Elimination of Acids in Alkalosis. R. Goiffon.—p. 1316.
*Surgical Possibilities in Parkinson's Disease. Wertheimer.—p. 1318.
*Untoward By-Effects of Lumbar Puncture. J. D. Perkel.—p. 1320.

Excessive Perspiration as Cause of Miliaria and Pyodermitis in Young Infants.—Marfan considers artificial feeding and rickets as the causal factors of habitual excessive perspiration of young infants. If the sweat is of abnormal composition and is not freely evaporated, it irritates the epidermis, and causes red miliaria. Itching, with subsequent scratching of the vesicles, favors invasion of the epidermis and sweat glands by pus-forming cocci, and development of pyodermitis. The children should be guarded against overheated rooms and too many blankets. All treatment of the pyodermitis fails as long as there is constant recurrence of the excessive sweating. Epinephrin associated with calcium phosphate, cod liver oil or ultraviolet rays, alone or alternately, reduce the tendency to sweating, and induce the healing of the pyodermitis.

Specific Methyl Antigen in Treatment of Experimental Tuberculosis.—Boquet and Nègre used emulsions made from methyl alcohol extracts of tubercle bacilli treated with acetone for at least five days to remove the fat and wax. A dose of 1 c.c. of this emulsion corresponds to 0.01 gm. of desiccated bacilli or 0.05 gm. of fresh bacilli. The emulsion seemed to act as an actual antigen, since four injections in rabbits of 2 or 3 c.c. at one day intervals induced an abundant formation of antibodies. From 60 to 100 units appeared in healthy rabbits, and about 1,200 units in tuberculous rabbits, instead of the 20 units before the treatment. The emulsion was applied in treatment of experimental tuberculosis of rabbits and guinea-pigs. While the controls died in two or three months, those treated with the emulsion resisted sometimes for seven or ten months. Fibroid changes in the tuberculous lesions were manifest after seven or eight months of the treatment. The emulsion does not induce a local or general reaction. Increasing doses of the antigen, given at two or three days' intervals, were perfectly tolerated by tuberculous patients. The general health improved, lupus lesions healed over, and progressing lung lesions displayed a tendency to sclerosis. Their technic for preparation of the antigen is given in detail.

Elimination of Acids in Alkalosis.—Goiffon explains the augmented urinary elimination of organic acids in experimental alkalosis. It seems to be connected with an insufficient oxidation of the acids in the organism, owing to a relative deficiency of oxygen in the blood.

Surgical Possibilities in Parkinson's Disease.—Wertheimer analyzes the different theories on the location of lesions in Parkinson's disease and in parkinsonism from any cause. He believes that ramisection should be preferred to radicotomy since the technic is easier, and it respects not only the nerve roots but also important portions of the sympathetic tracts. He says that as the parkinsonian syndromes are progressive, their prognosis justifies active intervention.

Complications of Lumbar Puncture.—No fatal outcome occurred in Perkel's 1,600 cases of lumbar puncture. Of 852 persons observed for a time after the puncture, signs of meningism appeared in 322. The main cause of this complication seemed to be the escape of cerebrospinal fluid into the epidural space; also cerebrospinal shock, capillary hemorrhages, as well as the meningeal reflex on the vasomotor centers during the puncture. Signs of meningism are more common in women than in men, and more frequent in nonsyphilitic subjects, or in latent syphilis. The meningism phenomena lasted from one to ten days. Intravenous injections of distilled water or pituitary extract have given the best results in treatment of meningism with hypotension; with hypertension, a concentrated solution of sugar, by the mouth.

33: 1329-1344 (Oct. 7) 1925

Mikulicz Drain in Appendectomy. J. L. Faure.—p. 1329.
Permeability of the Meninges and Permeability of Vessels in General. Cestan, Laborde and Riser.—p. 1330.
Copper Treatment of Tuberculosis and Leprosy. G. Urbino.—p. 1332.
Lavage of Pleura in Empyema. F. L. von Muralt and Weiller.—p. 1334.

33: 1345-1360 (Oct. 10) 1925

Anaphylaxis to White Wine. L. Spillmann and V. de Lavergne.—p. 1345.
Diagnosis of Acute Appendicitis. L. Desgouttes.—p. 1346.
*Present Status of Treatment of Leprosy. Froilano de Mello.—p. 1348.

Present Status of Treatment of Leprosy.—Froilano de Mello's own experience in Portuguese India confirms the general verdict in favor of the ethyl ester of chaulmoogra and hydnocarpus as the treatment of choice in leprosy. It is probable that the active substance of chaulmoogra oil may be found also in other vegetable and animal oils, and thus the number of substances destroying the acid-resistant bacilli will be increased still more. Antimony appears to be at best only an adjuvant in treatment of leprosy.

Revue Neurologique, Paris

32: 361-432 (Sept.) 1925

*Pituitary Gland Versus Tuber Cinereum. Worms and Delater.—p. 361.
Polyneuritis Connected with Gestation. F. Skubiszewski.—p. 370.
Lumbar Meningomyelitis. M. De Teyssieu and Rubenthaler.—p. 382.

Familial Infantile Encephalopathies. Crouzon.—p. 388.
Tardy Recovery from Mental Disease. Robert.—p. 390.
Mental Impairment, of Organic Origin, from the Medicolegal Standpoint. Briand and Brissot.—p. 393.

Destruction of Pituitary Without Insufficiency Syndrome.—Worms and Delater report a case of nasopharyngeal lymphosarcoma with consecutive invasion of the pituitary and its complete destruction. None of the signs and symptoms attributed to pituitary insufficiency, such as polyuria and obesity, were present. This, they say, may be explained by the fact that the tuber cinereum and the infundibulum had remained intact.

Archivio Italiano di Chirurgia, Bologna

12: 1-756, 1925. Dedicated to A. Carle. Vol. I. Partial Index

*Nature and Prevention of Traumatic Shock. M. Donati.—p. 1.
*Depressing Action of Peptone. C. Foà.—p. 23.
*Implants of Fat After Fixation. A. Bertocchi.—p. 35.
*Idem of Abdominal Wall Tissues. G. Galli.—p. 47.
*Idem in Plastic Operations on Viscera. P. Sannazzari.—p. 63.
*Treatment of Hydatid Cyst Without Drainage. F. Nassetti.—p. 125.
Personal Methods in Roentgenotherapy. G. G. Palmieri.—p. 251.
*The Bone Marrow with Simple Fractures. P. Fiori.—p. 293.
Osteomyelitis from Colon Bacillus in an Infant. U. Camera.—p. 348.
Experiments with Free Transplantation of Entire Muscle. Serra.—p. 355.
Experimental Tendon Plastic Operations. B. Anglesio.—p. 371.
*Union of Nerves in Rats in Parabiosis. B. Morpurgo.—p. 467.
*Injection Treatment of Trigeminal Neuralgia. A. M. Dogliotti.—p. 483.
Tibia Flaps to Close Gap in Skull. M. Bufalini.—p. 529.
*Gangrenous Ulcer in the Cheek. O. Cignozzi.—p. 616.
*Surgery of the Thyroid. L. Bobbio.—p. 719.

Traumatic Shock.—Donati's research on dogs and rabbits confirms the assumption that the so-called toxic substances which form in tissues injured by an accident are of a peptone nature. They result from the disintegration of proteins, and their action is different from that of histamin. The nervous elements in traumatic shock may be explained by the injury of the vegetative nervous system from the trauma itself or from the peptone-acting substances generated in the traumatic focus and stimulating the parasympathetic. If it is possible to ward off this pathologic stimulation of the parasympathetic (by curare, by an anesthetic, by atropin, etc.) the shock does not occur or is slight. On the other hand, eserin, pilocarpin, etc., enhancing the excitability of the parasympathetic, aggravate the traumatic shock. The preexisting vagosympathetic tonus usually determines the intensity of the traumatic shock. The shock occurs when the peptone-like substances generated in the traumatic focus pass rapidly in large amounts into the blood. The shock effects of peptone injected into the blood vary with the speed with which it is injected. Donati's research therefore conciliates the "nervous" and the "toxic" theories on the origin of traumatic shock, and points the way to effectual prevention and treatment with drugs to reduce the excitability of the parasympathetic. This may prove a useful preliminary to operations and to ward off traumatic shock after accidents. His research was done mainly on the results of contusion of the soft parts of joints. The blood from such a focus exerted a shocklike effect on another animal unless the latter was under the influence of curare, for example. When this was the case, no tendency to shock appeared.

Depressing Action of Peptone.—Foà was impressed with Donati's findings, summarized in the preceding abstract, and reports further research which demonstrated that peptone stimulates the vasodilating fibers in the parasympathetic. These are the fibers which are paralyzed by curare. Curarized dogs do not respond to injection of peptone.

Transplantation of Tissues Previously Treated with a Fixation Fluid.—Bertocchi describes implantation of free fat from five to 120 days after fixation. Even in regions previously free from fat, new fat tissue formed from the connective tissue, instead of cicatricial tissue. Thus deforming cicatricial retraction was avoided. Galli reports experimental research on implants of tissues from the abdominal wall (muscle, peritoneum) previously treated with fixation fluids. Sannazzari reports similar research with tissues, after fixation, used in closing gaps in abdominal organs. The results were very satisfactory in plastic operations on parenchymatous organs (liver, spleen, kidney), but, on the intestine, the implants were cast off sooner or later. The implanted tissue becomes enclosed in a cicatricial tissue capsule, and is gradually substituted by newly formed connective tissue throughout, but this occurs much more slowly in the fixation implants than with fresh implants. His article is profusely illustrated. The ordinary formaldehyd-alcohol fixation procedures were applied.

Treatment of Hydatid Cyst Without Drainage.—Nassetti discusses the indications, technic and results of closing the pericyst after it has been cleared out. The cavity left is obliterated by drawing the walls together with suture threads inside. The details of eleven cases are given to show the advantages of this.

Bacteriology of the Bone Marrow with Simple Fractures.—Fiori was able to cultivate bacteria from the bone marrow in twelve of twenty-eight cases of simple fracture of bones in the limbs. The bacteria found indicated that the shock from the trauma had lowered the resisting powers to such an extent that saprophytes or temporarily avirulent germs were able to invade and settle in the bone marrow, lungs or elsewhere. The germs found did not correspond to those on the skin.

The Growing Together of Nerves of Rats in Parabiosis.—Morpurgo reports what he thinks is the first successful instance of the regeneration of nerves in another animal of the same species, and their entering into functional control of the organs of motion and sensation in the extraneous organism.

Injection Through the Orbit in Treatment of Trigeminal Neuralgia.—Dogliotti's illustrations show how a needle introduced into the lower part of the orbit passes through the inferior orbital fissure into the foramen ovale. He describes three cases in which he injected alcohol by this means to cure trigeminal neuralgia. Both the second and the third divisions of the nerve can be reached in this way. He enumerates several special advantages of this route. The only by-effects are possible transient disturbance in the rectus muscles and transient edema of the lids.

Gangrenous Ulcer in the Cheek.—The septic gangrenous process in the cheek of the robust man was accompanied with doughy swelling of the six salivary glands, but there was no fever. The whole retrogressed under treatment with diphtheria antitoxin, 10,000 units the first and the second day and 5,000 the third. The necrotic mass was cast off spontaneously, and healing was complete by the thirtieth day. Cignozzi has had other cases of the kind, confirming the curative action of diphtheria antitoxin in these acute gangrenous granulomas in the cheek. The diphtheria bacillus is probably involved in the mixed bacterial flora in such cases.

Surgery of the Thyroid.—Among the lessons learned from the 272 operations analyzed by Bobbio, is that a sarcoma can develop in the thyroid without interfering with swallowing. Also the wisdom of an exploratory incision before removing the thyroid for an assumed cancer. If this had been done in one of his cases, the pus of a chronic strumitis would have been released, and the patient might have been spared the radical operation, with its recurring fatal postoperative hemorrhage. After operative treatment of exophthalmic goiter, it is extremely important to give an abundance of water to rinse out the toxins, especially when there is fever and the symptoms show an aggravation at first after the operation.

Pediatria, Naples

33: 1029-1084 (Oct. 1) 1925

Pneumococci in Children. A. Laurinsich.—p. 1029.
Chronic Aleukemic Lymphadenosis. L. Chimisso.—p. 1039.
Epidemic Encephalitis in Children. M. Misasi.—p. 1055.
Primary Pneumococcus Peritonitis. G. Tenca.—p. 1065.
Vulvovaginitis After Scarlet Fever. C. Troili.—p. 1071.

Policlinico, Rome

32: 1381-1415 (Oct. 5) 1925

Treatment of Chronic Suppurative Otitis. G. Guida.—p. 1381.
Cesarean Section in Placenta Praevia. G. Zanetti.—p. 1386.
Contraction of Pregnant Uterus. P. Castagna.—p. 1387.

Hemorrhage Preceding Rupture of Uterus. R. Giampaolo.—p. 1389.
Pregnancy in Uterus Bicornis. S. Pera.—p. 1391.
Pseudotuberculous Oophoritis. F. Troyano.—p. 1392.
Anopheles Infestation and Malaria. D. Falleroni.—p. 1394.
Lung Tumors in Cattle. R. Marchesini.—p. 1396.

32: 477-532 (Oct. 1) 1925. Medical Section

*Biologic Import of Cholesterol. G. Borgatti.—p. 477.
*Injection of Sugars in Insulin Hypoglycemia. Caltabiano.—p. 489.
*Blood Pressure and Blood Calcium After Irradiation of Suprarenals. A. Pozzi.—p. 503.
Present Status of Surgery of Pulmonary Tuberculosis. E. Trenti.—p. 512.

Biologic Import of Cholesterol.—Borgatti poisoned dogs with methyl alcohol. The concentration of cholesterol in their serum seemed to be parallel with their resistance to the poisoning. Autolyzing liver tissue contains progressively more cholesterol. Acetone poisoning increases the blood cholesterol. He believes that cholesterol protects and stimulates the organism, especially the central nervous system, and that the liver not only excretes, but also produces cholesterol.

Injection of Sugars in Insulin Hypoglycemia.—Caltabiano saw no results of intravenous injections of solutions of saccharose, maltose or lactose in hypoglycemia produced by insulin. He believes that the insulin prevents their transformation into glucose. In the hypoglycemia phase, the combined sugar of the blood was always increased.

Blood Pressure and Blood Calcium After Irradiation of Suprarenals.—Pozzi found a temporary rise in the blood pressure of dogs irradiated on the suprarenal region with moderate doses of roentgen rays. With large doses, the pressure was irregular. No influence was noted in man. The changes of blood calcium were not constant.

Riforma Medica, Naples

41: 865-888 (Sept. 14) 1925

Respiratory Neuroses. L. Giuffrè.—p. 865.
Ulcer-Cancer of the Stomach. G. B. Cengiarotti.—p. 868.
Extra-Uterine Pregnancy. E. Aievoli.—p. 871.
Multiple Myeloma. A. Bianchi.—p. 872.

41: 889-912 (Sept. 21) 1925

Fistulas in the Side of the Neck. L. de Gaetano.—p. 889.
*Spasmophilia with Peptic Ulcers. R. De Tullio.—p. 896.
Italian Work on Parasitic Origin of Cancer. B. Lunghetti.—p. 898.
Latent Infection. I. Jacono.—p. 900.

Spasmophilia with Peptic Ulcers.—De Tullio examined patients with ulcers of the stomach and duodenum for various signs of spasmophilia, and made other tests of the vegetative nervous system. While confirming Peritz' and Fleischer's findings, he believes that both the ulcers and the spasmophilia are only coordinate elements, neither subordinate to the other. All the patients had symptoms of disturbance in the vegetative nervous system, but could not be classed either as strictly vagotonic, or sympathicotonic. For instance, an exaggerated reaction of the pupil to atropin might be associated with an atropin-resistant heart. The cause of the ulcers may be disturbances of the metabolism.

Anales de la Facultad de Medicina, Lima

8: 1-132, 1925

Impressions from Trip to United States and Europe to Study the Conditions of Medical Education. J. Pou Orfila.—p. 9.
*Exploration of the Involuntary Nervous System. J. O. Llerena.—p. 52.
History of the Lima Medical Faculty. Hermilio Valdizán. C'tn. Supplement.—pp. 89-140.

Study of the Involuntary Nervous System.—Llerena gives a comprehensive review of the literature on the sympathetic and parasympathetic nervous systems, describing the methods for testing their functional capacity and behavior. He emphasizes the necessity for introducing them more generally in study of endocrine symptoms and of the individual constitution. Above all, he says, before attempting any form of protein therapy, the tonus of the parasympathetic system should be ascertained. All such tests should be made fasting. The oculocardiac reflex and the solar reflex serve as an index for the entire vegetative nervous system, not merely of the parasympathetic, as some claim. Atropin reduces the oculocardiac reflex and exaggerates the solar. Epinephrin increases the solar without changing much the oculocardiac, while pilocarpin exaggerates both reflexes, its action most pronounced on the oculocardiac. The abdominocardiac reflex seems to be of value only in diagnosis of visceroptosis. He gives tables showing the comparative findings in fifty hospital patients with these and other tests under various conditions.

Anales de la Facultad de Medicina, Montevideo

10: 481-544 (June) 1925

*Retroflexion of the Gallbladder. A. Lamas.—p. 494.
*Deep Radiotherapy for Uterine Myomas. C. Butler.—p. 497.
*Otitis Mucosa and Fulminating Meningitis. P. J. Martino.—p. 508.
Torsion of Cyst in Mesentery. A. Roldán.—p. 515.
*Vaccine Prophylaxis Against Typhoid. F. Abente Haedo.—p. 520.

Retroflexion of Gallbladder.—In Lamas' case the symptoms of cholelithiasis had been noted for sixteen years; after ten years there was a truce for six years. Then the symptoms returned but the pains seemed to be restricted to the gallbladder itself. The laparotomy revealed that the gallbladder was flexed—an actual retroflexion. Several gallstones had accumulated in the fundus where they were held in by the kink.

Deep Radiotherapy for Uterine Fibromyomas.—Butler relates that a complete cure of the symptoms was realized with a single sitting in 80 per cent. of his ten cases and in the others with two exposures. He used the so-called ovarian dose, and had no untoward by-effects of any kind.

Otogenous Meningitis.—Martino warns that a mucous otitis may be responsible for the intracranial inflammatory process. After a brief inflammatory phase, the mucous otitis continues its course. There may be slight pain in the ear or merely a sensation of fulness in the ear or the mastoid, or slight discomfort in the head. The drum-head shows none of the signs of ordinary acute otitis, and puncture brings merely a drop of secretion or nothing at all. This condition may persist for weeks; during this time the hearing is becoming more and more impaired, but subjective symptoms may not appear, or they may be slight, until, finally, sudden lassitude and headache warn of some intracranial complication. The ear may not be suspected as the cause of the disturbances, but the mastoid operation shows the characteristic extensive and deep destruction of the bone. In a case described, the acute pneumococcus otitis media in a boy, aged 12, was accompanied with facial paralysis and symptoms of acute labyrinthitis, all of which retrogressed completely after clearing out the mastoid focus.

Vaccine Prophylaxis of Typhoid.—Abente Haedo reports vaccination of 850 subjects by the mouth. Nine developed typhoid fever from one to twelve months after the vaccination. No by-effects were noted in any instance, and all ages were represented.

Revista Española de Medicina y Cirugía, Barcelona

8: 497-558 (Sept.) 1925

*Sulphur in Treatment of Arthritis Deformans. L. Gironés.—p. 497.
Spa Treatment of Gynecologic Affections. J. Suriol Torra.—p. 503.
Street Paving and Cleaning. Zardoya.—p. 508.

Treatment of Arthritis Deformans.—Gironés expatiates on the value of symptomatic treatment of arthritis deformans with sulphur. He gives the details of a case of chronic multiple osteo-arthritis in a young woman, of five years' standing, rebellious to all other measures, and a case of spondylitis, of thirteen years' standing, in a woman, aged 33, both of which showed the good effects of intramuscular injection of sulphur in oil, beginning with 0.002 gm. of sulphur in a 1 per cent. suspension. The temperature, pulse, leukocyte count and diuresis show the effects of the treatment, and these should be the guide as to the intervals. He increased to 0.02 gm. by the third injection in the first case (in nine days). The pain in the joints was modified and the nutrition of the bone under roentgen control seemed to be improved.

Revista de la Soc. Arg. de Biología, Buenos Aires

1: 3-12 (May) 1925

*Hitherto Undescribed Layer of the Retina. E. P. Fortin.—p. 3.

Hitherto Undescribed Layer of the Retina.—Fortin remarks that it is difficult to locate in the histologic specimen the seat of the phenomena observed in the eye, but his entoptoscope, with the mercury vapor lamp, has much facilitated such research. He here describes two layers of the retina which have been hitherto regarded as a single layer, the plexiform layer. In reality, there is a stratum of regular bell-shaped dioptric bodies, embedded in Henle fibers.

Deutsches Archiv für klinische Medizin, Leipzig

148: 129-272 (Sept.) 1925

*Heat Regulation in Fever. H. Gessler.—p. 129.
*Hypothermia. H. Gessler.—p. 140.
Polycythemia with Broadening of Pulmonary Artery. Schreyer.—p. 149.
Xanthoprotein Reaction in Blood Filtrates. E. Becher.—p. 159.
*Sugar and Calcium Content of Cerebrospinal Fluid. K. Brucke.—p. 183.
Carbohydrate Metabolism in Pregnancy. Klein and Rischawy.—p. 195.
*Amino-Acids in Blood. Liebeschütz-Plaut and Schadow.—p. 214.
Sino-Auricular Arrhythmias. P. Martini and P. Müller.—p. 223.
Diabetes Mellitus and Innocent Glycosuria. E. Kulcke.—p. 262.

Thermoregulation.—Gessler determined the respiratory metabolism in fever and with low temperature. When the patients were stripped they reacted differently. The response as expressed in the oxygen intake was stronger during the fever and in the beginning of it. It was lowered in subjects who had a low body temperature.

Sugar and Calcium Content of Cerebrospinal Fluid.—Brucke found in thirty-eight subjects an average of from 4.7 to 5.7 mg. of calcium per hundred cubic centimeters of cerebrospinal fluid. The minimum was 4.55, the maximum 6.3 mg. Diseases of the brain and meninges did not change it. The sugar concentration averaged 0.056 per cent.

Amino-Acids in Blood During Specific Dynamic Action of Proteins.—Liebeschütz-Plaut and Schadow found an abnormally low increase in the amino-acid concentration of the blood after meals in ten patients with a low specific dynamic action of proteins.

Deutsche medizinische Wochenschrift, Berlin

51: 1685-1724 (Oct. 9) 1925

Inflammations of Adnexa. C. J. Gauss.—p. 1685. C'cn.
Exanthema Subitum. J. v. Bókay.—p. 1687.
*Action of Bile Acids. A. Adler et al.—p. 1689.
*Toxicology of the Höfle Case. G. Joachimoglu.—p. 1691.
Milk Injections in Sepsis. H. J. Willerding.—p. 1692.
*Specific Treatment of Colitis. S. Went.—p. 1695.
Asthma. D. Rothschild.—p. 1697.
The Art of Prescribing. K. Schübel.—p. 1698. C'tn.
*Hormone of the Ovarian Cycle. C. P. Hart et al.—p. 1700.
*Wassermann Reaction in Rabbits. F. Klopstock.—p. 1701.
Syphilis Treatment and the Sedimentation Test. K. v. Berde.—p. 1702.
Rietschel's Prevention of Measles. E. Kovács.—p. 1703.
Syphilitic Aortitis and Malaria Treatment. E. Bersch.—p. 1704.
The Prostate Secretion. F. Jacoby.—p. 1704.
Milk Injections in Eczema. M. Lapinsky.—p. 1705.
Treatment of Joints: Hand and Finger. Noack and Schäffer.—p. 1705.
Zwieback for Children. F. Proskauer.—p. 1706.
Roentgen-Ray Treatment in Gynecology. F. Heimann.—p. 1707. C'td.
Tuberculosis. Proposed Swiss Law. M. Neisser.—p. 1708.
Habitual Constipation. G. Lepehne.—p. 1721. C'cn.

Action of Bile Acids.—Adler and his collaborators, Solti, Hermer and Schmid, have found that an intravenous injection of bile acids was not followed by the expected lowering of the surface tension; quite the contrary, the serum tension sometimes increased. The same phenomenon could be produced in vitro by adding the salts to serum, urine, and especially to bile. This regulation of the surface activity is probably due to the increased hydration of cholesterol, which adsorbs the acids. Intravenous injection of these substances caused an increased elimination of bile. The kidney threshold for bilirubin was also lowered, and bilirubin sometimes reappeared in the urine. It seems that the presence of cholates in the blood causes the passage of bilirubin into the urine. Because of this, and of the fact that the presence of cholates in the urine cannot be excluded by mere tests of its surface tension, they deny the existence of a dissociated jaundice. Tetrachlorphenolphthalein injected simultaneously with cholates appeared in the duodenum twice or three times as rapidly as when injected alone.

Toxicology of the Höfle Case.—Joachimoglu analyzes the case of the former German cabinet minister, Dr. Höfle, who died in prison from luminal and opium poisoning. Grave blame is placed on the first physician who failed to apply lavage of the stomach. The drugs should have been kept locked up instead of the nurses having the right to give them to the prisoner, as they did. The hospital in a prison should have permanent medical service like any other hospital: it took three and a half hours for the physician to reach the hospital that afternoon. With any suspicion of poisoning with compounds of the barbituric group, the urine should be examined for their presence.

Specific Treatment of Colitis.—Went reports further good results of the treatment of mucous colitis with colon bacillus autogenous vaccines.

Hormone of the Ovarian Cycle.—Hart, de Jongh, Laqueur and Wijsenbeek confirm fully Allen's and Doisy's results with the follicle fluid. Besides this, they were able to obtain a protein-free solution with the same effects on the castrated mice.

Wassermann Reaction in Rabbits.—F. Klopstock induced a positive Wassermann reaction in rabbits by intravenous injections of milk. The reaction became negative after an injection of arsphenamin.

Klinische Wochenschrift, Berlin

4: 1945-1992 (Oct. 8) 1925

Amentia. W. Mayer-Gross.—p. 1945.
*Preoperative Digitalis Treatment. E. Meyer and A. Reinhold.—p. 1948.
*Unity and Variations of Streptococci. R. Demme.—p. 1951.
*Granulation Cells as Protection Against Infection. Bergel.—p. 1952.
*Nerve Relations Between Stomach and Intestine. F. Rabe.—p. 1957.
**Ossification. F. Eichholtz.—p. 1959.*
*Alimentary Leukopenia and Leukocytosis. E. Wollheim.—p. 1960.
*Wassermann Reaction and the Blood Groups. A. Straszynski.—p. 1962.
*The Kidneys in Bismuth Treatment. A. Heimann-Trosien.—p. 1963.
"Action of Serum on Tuberculin Reaction." W. Jadassohn.—p. 1964.
"Syphilis, Paralysis, Tabes." F. Holzinger.—p. 1966.
*Action of Roentgen Rays and Explants. A. A. Krontowski.—p. 1966.
Trypanocidal Function of the Liver. F. Munter.—p. 1967.
Anosmia and Ageusia in Pregnancy. H. Schmidt.—p. 1967.
Gynecologic Hemorrhages. A. Seitz.—p. 1968. C'cn.
Survey on Periarteritis Nodosa. G. B. Gruber.—p. 1972.

Preoperative Digitalis Treatment.—Meyer and Reinhold require preventive treatment with digitalis before surgical interventions on patients with heart disease. They warn against it in normal subjects. An injection of epinephrin in persons prepared by digitalis may produce a dangerous vasoconstriction.

Uniformity and Variations of Streptococci.—Demme found such an inconstancy of the morphologic and biologic characters of various strains of streptococci that he concludes that they are all one species.

Granulation Cells no Protection Against Infection.—Bergel finds that the fibrin, not the cells of the granulation tissue, protects the wound against infection. He produced a granulation tissue by injections of fibrin. He does not believe in the protective function of the reticulo-endothelial apparatus.

The Nervous Relations Between the Colon and the Stomach and Small Intestine.—Rabe concludes from his experiments that the colon does not influence the higher parts of the digestive tract except when the function of the ileocecal valve is disturbed.

Ossification.—Eichholtz found with his collaborators that Robison's ferment probably splits the organic phosphates of the blood plasma in the kidney. It seems that the blood phosphates occur chiefly as organic esters, and appear in the urine as inorganic phosphates only after being split. He points out that experiments on the kidney may serve as a model of the slower process of ossification in the bones which is also directed by Robison's ferment.

Alimentary Leukopenia and Leukocytosis.—Wollheim had found an increased potassium-calcium ratio in the portal vein of animals after ingestion of milk. There was at the same time a marked leukocytosis in the blood taken from the ear. He now has obtained leukocytosis by injecting potassium chlorid into the portal vein, and leukopenia by injecting calcium chlorid. Injections into the ulnar vein had no effect, as other authors have found. Filinski obtained a peripheral leukopenia after electric stimulation of the pneumogastric, and leukocytosis after stimulation of the splanchnic nerves.

Wollheim found with stimulation of the pneumogastric, an increased calcium and with the splanchnic an increased potassium concentration in the blood from the portal vein.

Wassermann Reaction and the Blood Groups.—Straszynski confirms the observation that in Poland the individuals of the Group O (Jansky I) lose their positive Wassermann reaction sooner than Groups A (II), B (III) and especially A B (IV). The ratio was 1:1 63:2:2.4. It seems therefore that the rapidity of the disappearance of the Wassermann reaction under treatment is a constitutional character which is in correlation with the blood group. He emphasizes that this does not mean as yet that the curability is parallel.

The Kidneys Under Bismuth Treatment.—Heimann-Trosien observed a disappearance of casts from the urine in spite of continued treatment, in thirty-nine patients in whose urine casts had appeared after the fifth to the eighth injection of bismuth She concludes that the casts may be neglected by the practitioner; he should, however, test the urine regularly for albumen just as he has to do during arsphenamin and mercury treatment.

Action of Roentgen Rays and Explants.—Krontowski found a good growth of tissue cultures taken from a chicken embryo that had received a lethal dose of roentgen rays. He emphasizes this difference between the lethal dose for the embryo and the amount necessary to kill its tissues.

Medizinische Klinik, Berlin

21: 1485 1520 (Oct 2) 1925

Diseases of the Pancreas Isaac Krieger —p 1485. C'cn., p. 1527.
Colloid Chemistry and Medical Problems R Stern —p 1487.
Symposium on Surgery in Cancer of the Rectum Kirschner. Küttner —p 1491 C'tn.
*Roentgen Treatment of Asthma A Muller —p 1493.
*Substitutes for Epinephrin in Glaucoma C Hamburger —p 1495.
Malaria Treatment of General Paralysis. R Unger —p 1498
Serum Sickness H Zeiss —p 1500
Histocytomatoses E Epstein —p 1501 C'td
Treatment of Eczema W Lowenfeld —p 1504
Tuberculosis as Occupational Injury in Sanatorium Employe Von Schnizer —p 1505
Survey on Internal Medicine E Edens —p 1507
Letters from du Bois Reymond, Claude Bernard and Johannes Muller to Karl Ludwig E Ebstein —p 1518

Roentgen-Ray Treatment of Asthma.—Muller irradiated the hilum of the lungs and the spleen, using one third of the skin dose, and repeating the series three or four times at intervals of three weeks More than 25 per cent of his twenty-two patients were much improved and 50 per cent were distinctly benefited The eosinophilia diminished during the treatment

Substitutes for Epinephrin in Treatment of Glaucoma.—Hamburger endeavored to avert the by-effects of epinephrin on the blood pressure, while retaining its beneficial action on glaucoma, in subconjunctival injections He found that the dextrorotating isomer of epinephrin is one of the substances with such properties. Another is a synthetic pyrocatechin containing the methylamino-acetic group He reiterates that his method does not cure—except in certain cases of acute glaucoma—and fails sometimes in the chronic form Yet so do operations, which frequently may be avoided by it

21: 1521-1560 (Oct. 9) 1925

*Resection of Hemisphere of Cerebellum H Schloffer.—p 1521.
Comment O Potzl —p 1524.
*Streptococcus Etiology of Acute Polyarthritis G Singer —p 1530
Symposium on Cancer of Rectum Schloffer, Guleke, Rohde —p 1534
Treatment of Diabetes Insipidus with Testis Extracts H Rothmann —p 1535
Tuberculin Tests on School Children Klein —p 1536
Action of Treatment on Gastric Secretion E Kolta and Z Benkovics —p 1538
*Fever Treatment in Impending Hemoptysis H Grossfeld —p 1538.
Early Diagnosis of Appendicitis Rapp —p 1539
Vaccine Encephalitis Warschauer —p 1541
"Protein Therapy in Pediatrics" P. Váradi —p 1541
*Histocytomatoses E Epstein —p 1542 C'cn
Acceleration of Death by Trauma W. Brandis —p 1546
Toxin Antitoxin Immunization H Goldschmidt —p 1547.
Semmelweis F. Bruck.—p. 1559

Resection of Hemisphere of Cerebellum.—Schloffer reports on a case of resection of almost the whole right half of the cerebellum. Only the nucleus dentatus and a few other parts were left intact. The patient, a man of 40, recovered completely, and had practically no symptoms due to the loss of the hemisphere.

Streptococcus Etiology of Acute Polyarthritis.—Singer reproduces photomicrographs of organs containing streptococci, taken from cases of acute rheumatic polyarthritis. He reviews the literature and especially his own investigations made during the last thirty years. He believes that polyarthritis, endocarditis lenta and viridans sepsis are the last stages of a chronic streptococcus infection of identical etiology.

Fever Treatment in Menacing Hemoptysis.—Grossfeld recommends parenteral injection of proteins in tuberculous patients with protracted bleeding from the lungs. This treatment increases the coagulability of the blood.

Histocytomatoses.—Epstein surveys the generalized affections of the reticulo-endothelial system, which he calls histocytomatoses. Generalized xanthomatosis, Gaucher's disease, and lymphogranulomatosis are some of the diseases he classifies under this heading

Mitteilungen a. d. Grenzgeb. der Med. und Chir., Jena

38: 567 673, 1925

*Protein Therapy for Peptic Ulcer. Von Hertlein —p 567.
*Metal Salts in Treatment of Wounds B. Pfab —p 575
Clinical Aspect of Periarteritis Nodosa. F J Laux —p 582.
*Behavior of Blood Pressure in Different Positions Stahnke —p. 592.
Multiple Symmetrical Disease of Tendon Sheaths and Bursae. M Holzweissig —p 605
*Fat Embolism. F Paul and F Windholz —p 614
*Importance of Human Blood Groups in Modern Medicine O Hoche and P Moritsch —p 652

Protein Therapy of Gastric and Duodenal Ulcer.—No benefit seemed to be derived from the treatment with parenteral injection of a protein, and no harm.

Metal Salts in Treatment of Wounds.—Pfab reports excellent results with a silver chlorid salve applied to torpid leg ulcers, to utilize the oligodynamic action of the metal salt.

The Blood Pressure with the Body in Different Positions.—Stahnke reports experiences which demonstrate that the position on all fours restores the primal physiologic position for the circulation The demands made on the circulatory apparatus seem to be less in this position than under other conditions The blood pressure may drop 8 or 10 mm below the normal figure in the erect position. In heart disease, it might be well to have the patient do creeping exercises to strengthen the tone of the heart when ordinary gymnastics are too much of a strain The blood pressure rises in animals when they are made to stand on their hind legs. In one instance (Hill) the animal died from the circulatory disturbance

Fat Embolism.—Paul and Windholz describe a case of the so-called cerebral form of fat embolism Besides the direct injury of the brain, there was greater damage from the toxic action of products of metabolism. Necropsy of the previously healthy woman who had succumbed to fat embolism of the uremic coma type, ten days after a compound fracture of the bones of the right leg, revealed typical uremic necrosis of the mucosa of the ileum, while nothing was found in the kidneys to indicate chronic disease. Fat was found in the capillaries of all the organs of the circulation, especially in the kidneys Repeated intravenous injection of the bone marrow fat in rabbits led to an increase of residual nitrogen in the blood, the proportions sometimes paralleling those noted in uremic coma in man. At the same time, the sugar content of the blood, after a primary rise, fell to a minimum like that in fatal insulin hypoglycemia in rabbits. Some of the animals showed no appreciable disturbances from the intravenous injection of fat, but no explanation for their immunity could be discovered

Importance of Blood Groups for Modern Medicine.—Hoche and Moritsch emphasize the importance of blood grouping from the standpoint of prophylactic vaccination, as well as for transfusion of blood. Susceptibility to diphtheria and to cancer is not restricted to any special blood group, but the susceptibility to diphtheria accompanies the blood group in which it is found, and is inherited with the blood grouping according to mendelian laws. A Schick positive father, of blood Group II, has a Schick positive daughter, Group II, while the son is Schick positive, but of Group III, like the Schick negative, Group III mother. There is no need to apply prophylactic measures to the daughter, while the son—who is in a state of latent immunity—requires preventive vaccination, and it will be a success in him. Other persons are incapable of reacting to an antigen with production of antibodies, and they need help from without, the diphtheria antitoxin or the tetanus antitoxin reenforcing their own weak defensive forces by a passive immunization.

Münchener medizinische Wochenschrift, Munich

72: 1671-1718 (Oct. 2) 1925

Puerperal Infection with Gas Bacilli. L. Nürnberger.—p. 1671. C'td.
Antagonism of Bacteria in Cultures. M. Gundel and H. Himstedt.—p. 1674.
*Blood Phenols. E. Becher et al.—p. 1676.
Mechanism of Action of Insulin. E. F. Müller et al.—p. 1677.
Insulin Treatment of Diabetes. E. Kaufmann.—p. 1681.
Colorimetric Determination of the Blood Sugar. E. Kaufmann.—p. 1685.
*Menstruation and the Permeability of the Meninges. R. Benda.—p. 1686.
*Puerperal Mastitis. O. Silzer and W. Meyer.—p. 1688.
*Antiscorbutic Value of Milk. E. Loewy.—p. 1690.
Prevention of Infiltrates. Metzner.—p. 1694.
"Treatment of Gonorrhea in Women." J. Koerner.—p. 1694.

Blood Phenols, Especially in Pernicious Anemia.—Becher, Litzner and Täglich were able to find and estimate bound phenols in every normal blood. Their concentration is about 0.05 mg. per hundred cubic centimeters of blood. They found large amounts of them and also some free phenols in the blood in pernicious anemia. This might support the theory of its intestinal origin. The phenols are remarkably increased in the insufficiency stage of nephritis, and they think that clinical symptoms parallel more the blood concentration of phenols than the concentration of urea.

Menstruation and the Permeability of the Meninges.—Benda used the sodium fluorescein, the hemolysin and bromin reactions for determination of the permeability of the meninges in menstruating and pregnant women. It was frequently increased in the second half of pregnancy and especially in labor. It was more pronounced in the first pregnancy, and constant and high in toxemia. He also confirms the increased permeability on the first day of menstruation. He discusses the pathogenesis, and points to the endocrine glands, especially to a protective action of the corpus luteum. A disturbance of the endothelium of the capillaries seems to be the basis of the condition.

Puerperal Mastitis.—Silzer and Meyer recommend Bier's passive hyperemia treatment (by suction) in mastitis. Out of forty-two women, twenty-three recovered without incision. The method is also valuable in cases in which the abscess had to be opened.

Antiscorbutic Value of Milk.—Loewy investigated the vitamin content of the milk sold in Cologne. He found that even the best milk, briefly boiled, has in the winter months practically no vitamin C.

72: 1719-1766 (Oct. 9) 1925

*Duodenal Enemas. G. Marwedel.—p. 1719.
*Protein Therapy in Hypertension. E. Kylin.—p. 1720.
*Hematology in Abdominal Inflammations. M. John.—p. 1721.
*Surface Tension in Pathogenesis of Cancer. E. Bauer.—p. 1723.
Wider Indications for Cesarean Section. F. Orabich.—p. 1725.
*Incision in the Natural Folds of the Hand. M. Schiessl.—p. 1728.
Injury and Regeneration of Tendons. P. Schrödl.—p. 1730.
Improved Instrumental Technic for Inspection of Vulva and Cervix. H. Hinselmann.—p. 1733.
Roentgen Diagnosis of Adhesions. A. Arpási.—p. 1734.
*Contraction of Muscle. H. Beer.—p. 1734.
Quantitative Microtest for Blood Sugar. Becher and Herrmann.—p. 1734.
*Puerperal Infection with Gas Bacilli. L. Nürnberger.—p. 1735. C'cn.
Johannes Müller. E. Ebstein.—p. 1738.
Headache. O. Rehm.—p. 1739. Begun, p. 1696.
Professional Secrecy. L. Schätz.—p. 1741.

Duodenal Enemas.—Marwedel confirms the advantages of Allard's method in case of occlusion of the common bile duct by a stone and in cholecystitis. The method consists in injection of 300 c.c. of warm 15 per cent. solution of magnesium sulphate by the duodenal tube. It provokes diarrhea and, if gallstones are present, a colic which may expel the stone. It is sometimes necessary to repeat the procedure several times. He recommends to use the method in jaundice as a routine procedure, and, if it is successful, to defer surgical intervention until the cholemia has subsided.

Protein Therapy in Hypertension.—Kylin observed in some cases of hypertension a transient lowering of the blood pressure after injection of milk.

Hematology in Abdominal Inflammations.—John obtained excellent diagnostic results in his 4,000 examinations of blood slides. A marked shifting to the left (for instance, with 22 per cent. of neutrophils with S shaped nuclei and aneosinophilia) indicates a purulent process (appendicitis) even with normal temperature and slight subjective disturbances. Negative findings in the blood exclude a dangerous inflammation, and may suggest simple colic.

Surface Tension in Pathogenesis of Cancer.—Bauer reviews his further experiments and the literature which confirm his theory as to the significance of surface tension in the origin and growth of cancer. He believes that a lowered tension of the tissue fluid is sufficient to cause a cancer and to keep it growing. He finds that the surface activity of tar or anilin derivatives is a sufficient explanation for the production of cancer by their application. Since the spleen seems to contain an inhibiting factor against cancer growth, he injected an extract from this organ in rabbits. It increased the surface tension of their serum, especially where it had been low. The preparation seems to produce the same effect in man.

Incision in the Natural Folds of the Hand.—Schiessl had good results in sixty-eight cases of purulent tendovaginitis and in 122 cases of cellulitis originating in the palm, using M. Schmitz' incisions in the natural transverse folds of the skin on the hand and fingers, instead of the usual longitudinal incision.

Contraction of Muscle.—Beer concludes from the sound which can be heard under certain conditions on the observer's own muscles that the number of nervous impulses necessary for contraction of a muscle is proportional to the intensity of the contraction.

Puerperal Infection with Gas Bacilli.—Nürnberger makes a sharp distinction between the gas bacillus infection of the inner surface of the uterus and the gas gangrene which attacks its musculature. In the latter case crepitation may be felt. The diagnosis is easy if the classic triad of symptoms appear (ictero-cyanotic complexion, methemoglobinuria and dark color of the blood serum). In other cases, only the usual signs of puerperal infection are found, but the lochia contain the short, broad, gram-positive Fraenkel bacillus. In the simpler infection, evacuation of the uterus is sufficient. With gas gangrene, only an immediate abdominal extirpation of the uterus can help. Fraenkel's specific antiserum should be used in every case, and blood transfusion, whenever there are signs of grave destruction of erythrocytes. In gas bacillus peritonitis, drainage is helpful. The odor of the exudate is offensive only when there is mixed infection.

Zentralblatt für Chirurgie, Leipzig

52: 2289-2236 (Oct. 10) 1925

*Hallux Valgus and the Constitution. E. Payr.—p. 2289.
*Hallux Valgus Surgery. E. Payr.—p. 2292.
Correcting the Supination of the Heel-Bone in Pes Cavus. M. Hackenbroch.—p. 2296.
*Impairment of Gait After Osteotomy in Coxitis. V. Chlumský.—p. 2298.
Surgical Access to the Kidney. K. Mermingas.—p. 2300.

Hallux Valgus and the Constitution.—Payr differentiates between the hallux valgus in asthenic or hypoplastic subjects and that in arthritis patients. The former is chiefly due to the shrinking of the capsule of the joint caused by unsuitable shoes. The other type has greater changes in the bones. For treatment of the first type, he has devised an excision of the ligaments of the capsule on the lateral side. He has used this method with good results in twenty-seven cases. Osteotomy is necessary in the arthritis type. Correct shoes are essential for prevention of recurrence. The patient must not wear his old shoes. Arthroplasty may be necessary in grave deforming arthritis. He is strictly opposed to treatment by artificial ankylosis of the joint.

Impairment of Gait After Osteotomy in Coxitis.—Chlumský investigated the cause of dissatisfaction in patients who had been subjected to subtrochanter osteotomy. He discovered it in the genu valgum which they develop as compensation before the operation, and which causes afterward the feeling of weakness in the knee. This can be avoided either by refraining from insisting on the complete equality of the length of the extremities—even if one has to pad a shoe higher—or by a simultaneous surgical correction of the genu valgum.

Zentralblatt für Gynäkologie, Leipzig

49: 2225-2288 (Oct. 3) 1925

*Bilirubinemia in Pregnancy. E. Herrmann and F. Kornfeld.—p. 2227.
*Postclimacteric Hemorrhage and Cancer of Ovary. Schiffmann.—p. 2229.
Cellular Hybrids and Cancer Treatment. F. D'Erchia.—p. 2234.
Resection of Ovary in Treatment of Hemorrhagic Metropathies. Engl.—p. 2235.
Necrosis of Interstitial Myoma. E. Völcker.—p. 2238.
Ovarian Pregnancy After Tubal Pregnancy. M. Kupfer.—p. 2241.

Bilirubinemia in Pregnancy.—*Herrmann and Kornfeld* found with the oxidation method an increased bilirubinemia in all the pregnant women examined. The reaction was stronger in the first months. Women with pernicious vomiting had high concentrations of bilirubin. The increase was not constant in eclampsia.

Postclimacteric Hemorrhage and Cancer of Ovary.—Schiffmann points out that even a slight and transitory uterine hemorrhage in the menopause is a sign of probable cancer. Malignant disease of the ovary should be suspected with otherwise negative findings.

Zentralblatt für innere Medizin, Leipzig

46: 953-968 (Oct. 3) 1925

Neurotic Respiratory Tetany. O. Müller.—p. 955.

Časopis lékařů českých, Prague

64: 1429-1464 (Oct. 3) 1925

E. Albert. R. Jedlička.—p. 1430.
The Wassermann Reaction in Obstetrics. G. Bazala.—p. 1431. C'td.
*Iodin Preparations in Puerperal Fever. L. Hnátek.—p. 1437.
*Sympathectomy in Surgical Tuberculosis. Zahradnický.—p. 1441.
Roentgen-Ray Treatment of Tuberculous Peritonitis. Stratil.—p. 1444.
Vegetative System in Abdominal Diseases. F. Nikišin.—p. 1451.
*Complement Fixation with Plasma. J. Tomčik and J. Vignati.—p. 1458.

Iodin Preparations in Puerperal Fever.—Hnátek found no iodin in the lochia of women after intravenous injections of 0.5 gm. of potassium iodid.

Sympathectomy in Surgical Tuberculosis.—Zahradnický would reserve periarterial sympathectomy in tuberculosis of bones and joints only for the grave cases with fistulas, as a last conservative resource before amputation. It is superfluous in closed tuberculosis which may, besides, flare up under this treatment.

Complement Fixation with Plasma.—Tomčik and Vignati report on 100 cases tested with the Wassermann and Hecht reactions and with Kabelík's modification (using herudin plasma instead of the serum). The latter method was positive in five patients with a history of syphilis and negative Wassermann reaction. The other findings were concordant, although stronger with Kabelík's plasma method. Similar results were obtained in tuberculosis. They conclude that the plasma method is more sensitive than the classical test, without being less specific.

Vestnik Endocrinologii, Moscow

2: 91-168 (March) 1925

*Effect of Thyroid Extract in Fowls. B. Zavadovsky.—p. 91.
*Action of Epinephrin and Organ Extracts. Steppun and Sargin.—p. 115.
Diabetes and Insulin. I. Smorodintzeff.—p. 131.

Phenomena of Hyperthyroidism in Fowls.—Zavadovsky's experiments were carried out in the last five years on over 100 fowls. A single dose of 30 or 50 gm. of desiccated thyroid gland induced an *almost complete fall of the feathers* by the seventh to the thirteenth day. This occurred at any season, and was followed by a new growth of plumage by the twenty-first or thirtieth day. Instead of the previous dark colored feathers, the new presented white and black spots. The number of the white spots was proportional to the dose of the thyroid. Thus four successive feather growths were induced in a young cock within six months. Under repeated thyroid doses, nervous phenomena appeared, manifested by incoordination of movements, and lesions of the cerebral cortex. The latter phase presented the picture of acute poisoning, ending in death.

Influence of Placenta and Pituitary Extracts on the Action of Epinephrin.—Steppun and Sargin reiterate that injections of placenta and pituitary extracts enhance the vasoconstrictor action of epinephrin. The placenta extract may stimulate the action of the pituitary, and the latter the action of epinephrin, or the placenta extract may also exert a direct action on epinephrin. The effect of the active substances of the placenta and pituitary may be responsible for an exaggerated amount of epinephrin in the blood in pregnancy and childbirth.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 1515-1642 (Oct. 3) 1925

*Paroxysmal Hemoglobinuria. J. Enneking.—p. 1526.
Leptospira Icterohaemorrhagiae. Walch and Walch-Sorgdrager.—p. 1535.
The Constitution from Standpoint of Obstetrics and Gynecology. Remmelts.—p. 1543.
**Progressive Myoclonus—Epilepsy.* J. W. Rolder.—p. 1548.
*Duodenal Ulcer Accompanied with Jaundice. A. Kropveld.—p. 1552.
Plutarch's "Eubiotiek." H. J. Lulofs.—p. 1557.
Schubert, the Composer, from the Medical Standpoint. Koopman.—p. 1567.
First Notice of Scurvy in the Netherlands. J. van der Kleij.—p. 1573.

Paroxysmal Hemoglobinuria.—The special feature of the case described was that a hemoclastic crisis preceded the attacks of hemoglobinuria in the man of 37. The autolysin had a hemolytic action in the test tube even without chilling. The attacks of hemoglobinuria seemed to occur exclusively in the night. The man succumbed to necrosis of the bowel for a stretch of 30 cm.

Chronic Progressive Myoclonus-Epilepsy.—Rolder's patient presented the Unverricht-Lundborg type, and the girl's sister developed the same, with more pronounced dementia. The myoclonus preceded the epilepsy in one and followed it in the other case. A third sister is now beginning to show a tendency to myoclonus, but the three sons in the family (Jewish) are healthy.

Jaundice Accompanying Duodenal Ulcer.—The pains and other disturbances seemed to be relieved for a year after an operation for the assumed gallstones which failed to show any cause for the disturbances. There never had been actual colics. Then recurrence of symptoms led to another laparotomy which revealed the duodenal ulcer, close to the pylorus. It had escaped detection at the first, but had evidently been responsible for the paroxysmal jaundice, by way of periduodenitis and the hepatoduodenal ligament.

Finska Läkaresällskapets Handlingar, Helsingfors

67: 763-832 (Sept.) 1925

*Parenteral Protein Therapy. V. Grönholm.—p. 763.
The Skin Capillaries with Parenchymatous Keratitis. E. Enroth and E. Hisinger-Jagerskiold.—p. 777.
Sanocrysin Treatment in Finland. A. von Bonsdorff.—p. 783.
Postural Reflexes. F. Leiri.—p. 793.
Nutritional Value of Finland Beef. Häkkinen et al.—p. 803.
The Training of Nurses in England. L. Gratschoff.—p. 818.

Protein Therapy in Gonorrheal Conjunctivitis.—Grönholm treated forty patients with gonorrheal conjunctivitis with parenteral injection of milk (fifteen newly born, seven older children and eighteen adults), mostly in addition to the usual local measures. In five cases it proved remarkably effectual and in one instance the disease was certainly aborted by it. The swelling and secretion showed improvement more promptly after the protein therapy, and it aided in warding off cornea complications. But with the cornea already invaded, its action was uncertain. He gave usually two, occasionally three or four, and once five injections. When milk was used, he injected 10 c.c. in adults. During the same period fifty similar cases were treated the same without the protein therapy.

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THE CUTANEOUS NEUROSES

WITH PARTICULAR REFERENCE TO PSYCHOTHERAPY [*]

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The symptoms of the psychoneuroses are legion and are manifested in all branches in medicine. The well established form of treatment, namely, psychotherapy, is a valuable agent in the hands of all physicians practicing medicine. The psychologic phase of certain skin diseases should not be neglected in treatment. It appears, however, that little attention has been given to psychotherapy in dermatology.

The application of medical psychology may be of considerable value in the treatment of certain skin diseases, objectively as well as subjectively manifested. A psychic cause of such common skin diseases as pruritus and urticaria should be included among the many causes of these diseases, although textbooks on dermatology make little or no mention of a psychic cause of pruritus and no mention of psychotherapy in these diseases.

THE RÔLE OF SUGGESTION IN THE CAUSATION OF CUTANEOUS PHENOMENA

In a consideration of the psychogenic skin manifestations, reference should be made to the many reported instances which clearly set forth the rôle that suggestion plays in the causation of cutaneous phenomena. The following will serve as examples of this group:[*]

Mabille[1] suggested to a hypnotized man that a quarter of an hour after he should awake the letter V would appear at a spot on his forearm, which he marked with a pencil, and that this letter would bleed. The phenomena promptly appeared at the time and in the place suggested.

Focachon[2] applied a postage stamp to the left shoulder of a hypnotized subject, and kept it in place with ordinary sticking plaster and a bandage. He suggested to the patient that he had applied a blister. The patient was carefully watched for twenty-four hours at which time the bandage, which had been untouched, was removed. The skin under the postage stamp was thickened, necrotic, of a yellowish white color and puffy, contained serum and leukocytes, and was surrounded by an intensely red zone of inflammation. Several physicians confirmed this observation.

Dumontpallier[3] repeated the experiments of Focachon on several patients and obtained similar results. Charcot[1] and also Edwards[4] record the production, by suggestion alone, of patches of dermatitis resembling burns on the skin of hypnotized patients. The blisters in these ecchymoses by suggestion are similar to the case reported by Brown-Séquard,[4] in which a mother, seeing a window frame suddenly fall on her child, showed immediately afterward a large ecchymosis on the corresponding part of her arm

Suggestion and autosuggestion may play a part in the causation of itching. The desire to scratch is contagious, and psychic impression may alone suffice to initiate the sensation of itching.[5] This is exemplified in the occurrence of itching among medical students on the occasion of presenting a patient with a severely pruritic skin disease who in addition actually to scratching the skin goes through all the coarse jerking movements with elevation and rotation of the shoulders, which implies a "creepy" sensation on the part of the patient.

Bronson[6] discusses the autosuggestibility of itching in the following way: "Let any one sit quietly for a moment, fixing attention on the skin, and the chances are that sooner or later he will become conscious of a slight intrusive irritation at some point, a pinching or picking sensation, and the longer it lasts the more it demands attention." Although the itching brought on by psychic impression is transitory, nevertheless it shows how by mental representation the sensation of itching may be produced. In this regard, Du Bois[7] can appropriately be quoted: "A mental representation is already a sensation." It is perhaps possible that such mental representation may subsequently form the psychogenesis of itching that has become an obsession. Furthermore, it shows the baneful rôle of psychic fixation on the skin, which is sometimes an important factor in the continuation of itching. This phase of itching and its treatment by psychotherapy will later be discussed.

PSYCHOGENIC TYPES OF PRURITUS AND URTICARIA

There are no two skin diseases which have more diverse causes than pruritus and urticaria, and in which, in order to establish the etiologic factor, more careful history, clinical examination and laboratory examination are required. Each case of pruritus or urticaria presents an individual problem in treatment. Proper treatment, of course, necessitates grouping the case into an etiologic category; local treatment is only symptomatic.

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[*] Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints

[*] Read before the Section on Dermatology and Syphilology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N J, May, 1925

[1] Mabille· Note sur les hemorrhagies cutanees par autosuggestion dans le sommeil provoguee, Progres med **13**: 155, 1885

[2] Focachon, quoted by O'Malley, A, and Walsh, J J.. Essays in Pastoral Medicine, 1906, p. 349

[3] Dumontpallier De l'action vaso motrice de la suggestion chez les hysteriques hynotisables, Compt. rend. Soc. de biol, Series 2, 1885, pp 434 436

[4] Quoted by Van Harlingen, Arthur: Hysterical Neuroses of the Skin, Am J M Sc **114**: 64 79, 1897.

[5] A patient recently informed me that each time she purchases a hat, which necessitates trying on a large number (which others have similarly done) before the desired one is obtained, a period of transitory itching of the scalp invariably follows

[6] Bronson Sensation of Itching, Selected Monograph on Dermatology, New Sydenham Society, 1893, pp 299 316

[7] Du Bois Psychic Treatment of Nervous Diseases.

It is important in the treatment of these maladies to bear in mind the fact that they may be the cutaneous expression of a psychic reaction arising from variable causes, an anxiety state, or a result of a conflict of the emotions, comparable, perhaps, to the "sentiments d'incomplétude" of Pierre Janet[8] who styles it one of the manifestations of a general state of lowered psychologic tension.

Accordingly, the history of these patients should be taken with the aforementioned possibilities in mind; attention should particularly be directed at the circumstances associated with the onset of the pruritus or urticaria, the circumstances associated with its continuation, and its specificity referable to the time and place of its occurrence.[9] Indeed, these remarks pertain not only to pruritus or urticaria, but also to other cutaneous phenomena, as will later be shown. If a psychic origin of the complaint is suspected the patient may well benefit by the application, on the part of the physician, of the principles of Janet and of Dejerine. Psychotherapy is of considerable value in reconditioning the psychologic reaction, in producing a transformation of the mental attitude, in dispelling fear or dread, or in distracting the psychic fixation. This is accompanied by suggestion or more especially by reeducation. A full comprehension of the psychogenesis of the complaint is urged on the patient.

PRURITUS

Psychogenic pruritus is exemplified in the two following cases. The patients were successfully treated with psychotherapy.

Case 1.—A boy, aged 12, complained of a localized pruritus involving the scrotum. A local examination was negative. In an endeavor to penetrate the possible psychogenesis of the complaint, the patient was carefully questioned as to its onset. It was elicited that the pruritus followed the bite of either a mosquito or some other insect, which he was not sure. Further interrogation brought out the significant fact that the patient's mind was confused as to the relation between the bite of the insect and the cause of the pruritus. Accordingly, a transformation of the mental attitude was forthwith begun. It required very little explanation to straighten the matter out in the patient's mind. The pruritus promptly disappeared without any further treatment.

Case 2.—A man, a school teacher, was complaining of pruritus involving the upper trunk. Significant points in the history were these: its occurrence usually about 4 o'clock in the afternoon in the solitude of his room, and that frequently he anticipated its appearance by the application of an antipruritic proprietary medicament. A general physical examination was essentially negative, as was the urine and a blood chemistry study, the latter particularly in reference to blood sugar and uric acid. At first, conventional local antipruritic applications were prescribed and instructions issued relative to diet and exercise. He did not improve. Psychotherapy was forthwith begun. The possibility of the pruritus being psychogenic by virtue of its specificity as to time and place was explained to him together with its probable mechanism. Furthermore, the baneful influence of the use of the antipruritic applications in anticipation of the sensation of itching, through autosuggestion, was pointed out to him and he was accordingly advised to discontinue this practice. A modification of his daily routine in the late afternoon was instituted to facilitate the avoidance of psychic fixation by distraction. The baneful influence of psychic fixation on the skin was also explained to him. Following the foregoing the pruritus promptly disappeared and has not reappeared in the one and one-half years since that time.

The following case is a probable instance of pruritus symbolic of a mental conflict:

Case 3.—In the case of a married woman, with generalized pruritus of some months' duration, the general physical examination was essentially negative as well as laboratory examinations. The pruritus was very recalcitrant to treatment. A psychogenic basis was sought by the following procedure: A detailed history was taken with particular reference to the events prior to the onset of the pruritus. After several prolonged conversations, in which the patient did most of the talking, it was elicited (through what was virtually free association) that the pruritus appeared soon after her suspicions relative to the alleged unfaithfulness of her husband. Furthermore, her narration concerned otherwise unsatisfactory marital relations. Soon after these conversations the patient moved to a distant city, and no opportunity was afforded for psychotherapy.

The pruritus in the foregoing case was in all probability symbolic of soul pain. In pruritus of this type it is possible that much may be accomplished by psychanalysis.

In all cases of pruritus in neurotic patients it is important to bear in mind the possibility that the symptom itching may be the outward expression of an unconscious irritation.

In another patient it was elicited that the pruritus, of one month's duration, first appeared very shortly after the death of his wife. The patient was emotionally unstable and below par generally, doubtless, as a result of the grief and anxiety incident to his bereavement. The pruritus in this case was regarded more as a fatigue neurosis than as a psychologic reaction arising from an anxiety state. Treatment here was directed at the former etiologic factor rather than with psychotherapeutic measures.

Appropriate mention may here be made of the patient mentioned by Hartzell.[11] "The author has knowledge of an instance in which the smoking of a strong cigar after dinner in the evening was invariably followed by pruritus of the anus lasting throughout the night." In the etiologic considerations of this case, a psychic origin should be considered for reasons already discussed; likewise with pruritus following bathing—bath pruritus. A complex connected with bathing might be suspected.

Senile pruritus, a most intractable form of pruritus, is frequently, I believe, a psychoneurotic symptom. Itching in many patients becomes an obsession. I have patients tell me very calmly, sitting quietly with the hands folded in their lap, that at that moment they have intolerable itching. An aged patient with impaired memory, soon after awakening from a three-hour sleep, implored the nurse to relieve the itching which, she added, had been most severe during the past three hours.

THE RÔLE OF PSYCHIC FIXATION IN PRURITUS

In a consideration of psychogenic pruritus it is important to note that pain may appear at the site of psychic fixation, and this also applies to itching; the former is well exemplified by the topalgias of Blocq,[12] by which he designates a variety of monosymptomatic neurasthenia in which there is established a fixed pain in variable regions of the body but with an anatomic or physiologic delimitation. He regards the phenomenon as a clinical manifestation of a persistent sensitive image, analogous in the domain of the sensibilities to the fixed idea in the domain of the intelligence.

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[9] Of course, these circumstances do not necessarily connote a psychic origin of the pruritus or urticaria. For example, a generalized pruritus or localized pruritus of the palms appearing a few hours after an injection of arsphenamin is a toxicological reaction to arsenic (Klauder, J. V.: Clinical Aspects of Cutaneous Reactions After Arsphenamin, J. A. M. A. **82**: 933-939 [March 22] 1924). Again, the itching of scabies is invariably manifested soon after the patient gets into bed. The nonpsychogenic type of pruritus may be manifested only after the patient disrobes.

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The foregoing serves to explain itching and other subjective sensations at the site of psychic fixation in dermatophobias and in other morbid states which will later be discussed. The present discussion concerns that type of patient in which there may occur a psychic diffusion of itching, the patient becoming obsessed with the symptom of itching.

Psychic diffusion of itching may be initiated by a localized pruritic skin disease. By psychic fixation and perhaps too by mental representation, the sensation of itching continues after a pruritic skin disease has been cured and the skin becomes objectively normal, as, for example, the continuation of itching after scabies or pediculosis. In such patients the itching obsession occupies most of the patient's time and thought and frequently incapacitates him. In these patients, psychotherapy directed at the psychic fixation by distraction is of considerable value. The following case is a further example:

Case 4.—A patient referred for the treatment of postarsphenamin dermatitis had a generalized severely pruritic erythredemia which disappeared following treatment. The skin became objectively normal. The pruritus continued almost unabated and incapacitated him. He dreaded during the day the itching at night, and anticipated at night the itching of the forthcoming day. He read books on diseases of the skin and inquired whether the itching could not be attributed to parasites under the skin. He experimented with various diets. Obviously, his skin was the site of psychic fixation and the itching an obsession. As a means of distraction of the psychic fixation he was advised to resume work, and other measures were instituted toward this end. The patient's manner of living was directed. The itching eventually disappeared.

It is not alone sufficient in patients of this type to prescribe bromids and antipruritic medicaments, and to tell them to "take a journey and not to dwell on the itching."

Consideration should be given to the possible rôle of psychic fixation in the causation of localized pruritus, notably pruritus vulvae and pruritus ani.

URTICARIA

The mechanism that produces vascular dilatation giving rise to urticarial lesions is apparently set into motion through divers causes. It is well known that one of the causes is a psychic disturbance, such as fear, anger or shame. Hartzell[13] reports that a patient would become covered with urticarial lesions within five minutes after an interview with a stranger. In Schamberg's[14] patient a severe and protracted urticaria of nine months' duration followed the witnessing of the destruction of the patient's place of business by fire. Prolonged grief, anxiety and mental stress and strain of divers causes may likewise be the underlying factor. Hyde and Montgomery[15] aptly remark, "The widow must be made to set aside her heavy crape veil under which her urticaria plays."

Indeed, angioneurotic edema may arise following psychic disturbance. Jackson and Salisbury[16] record such an instance of a young woman who experienced an attack involving the hands and face as a result of anger. In certain types of psychogenic urticaria, of which Case 4 is an instance, much may be accomplished by psychotherapy, by reconditioning the psychic reaction, by dispelling fear or dread, perhaps, or by reeducative measures which will be shown later.

Case 5.—A recently arrived convict at one of our state prisons experienced each day when he was locked in his cell at 5 o'clock in the afternoon (the prisoners were not confined to their cells throughout the day) a severe attack of urticaria. For this reason he came under my observation. I explained to him, in terms he could comprehend, the psychogenesis of his urticaria, which was a psychologic reaction to fear, the fear of being confined in his cell. It was explained to him that a somewhat analogous phenomenon was blushing, which was entirely within the volition of a person depending on the development of a mental poise against the occasions that gave rise to it. Finally, I told him that the cure of his urticaria in a large measure depended on the manner in which he would mentally adapt himself to his environment. I had two talks with him; the second talk was a reiteration of the foregoing, parts of which were paraphrased. Following these talks the urticaria rapidly disapeared. No other treatment was employed. He has since experienced only rare attacks.

Mention may be made of another patient recorded by Hartzell[13] in whom a furious outbreak of urticaria occurred every afternoon about 5 o'clock for more than five years. In the etiologic consideration of this case a psychic basis should be considered. If only from this point of view, the morbid reaction may have become a habit, though the initial cause may no longer be operative. Reeducation of the patient may be of value to overcome the inductility of the fear of an attack each afternoon at 5 o'clock.

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Six months after I first saw her she was entirely well of her urticaria; she spontaneously told me that she believed the reeducation of her mental attitude was an important factor in her cure. The following note written by her discusses this phase of treatment:

"Like a great many other individuals, a particular job was given to me to perform. To meet the needs of this obligation it was and is necessary for me at all times to carry a little program of work. My time allotment gave me a very little opportunity for recreation; on an average one night a week might be taken for play. I never seemed to grow weary of the work itself and can truthfully say I always manifested a deep seated interest. However, at all times I was conscious of my next step, always anticipating an average amount of work to be done in an average time. I worked by the clock. My muscles at all times were tense, never relaxing for one moment. This condition was prevalent not only while working, but on the streets. I hurried through the streets as though the very imps were at my heels. When I was ready to court sleep it was with a tired aching body and a tired weary brain. My one consolation, however, was that I could sleep, . . . not a restless tossing on my pillow. For this I was truly grateful. Suddenly it dawned on me that my infinitesimally small life was infinitely important to myself. I took myself in hand and became an almost dual personality. I began to relax. This state was not acquired in a day. I exaggerated a looseness of muscle in order for it to become a habit. I seemed to grow conscious of the enormity of my arms and hands and became the exact counterpart of Ichabod Crane. It mattered not to me how much I would accomplish the next day, the next or the next; I lived only in the present. It was not necessary for me to set a new standard of work; I was going to accomplish just what I could without the terrific nervous strain. This seems all rather childish coming from a grown-up, and no doubt sounds foolish to an absolutely trained mind, but it was a means to an end. I seem to accomplish things, my life's job has not changed an iota; I only feel I am master of myself as to muscle and mental control. At times I slide back to the beaten path but find I must again school myself to a relaxation. This method has helped in some way to decrease the welts and burning patches which visited my skin at all times without regard to my feelings. I consider my skin condition now almost normal."

OTHER SKIN PHENOMENA FOLLOWING PSYCHIC DISTURBANCE [18]

In dealing with a large number of patients with skin diseases it is not uncommon to encounter such diseases as eczema,[19] psoriasis and dermatitis herpetiformis in which no specific cause is known, occurring acutely following severe mental shock. Whitfield [20] reports an interesting case of acute eczema appearing in a patient after fright incident to an aeroplane raid by hostile aeroplanes. The acute outbreaks of eczema repeatedly followed each aeroplane raid and no longer occurred when the patient moved to a safer region. He reports a similar case in which the patient experienced repeated attacks of acute vesicular eczema of the hands subsequent to a period of great suspense.

The sudden turning white of the hair after great fright has been frequently reported. Vignolo-Lutati [21] records such instances occurring in those engaged in front line service in the recent war. Mention may be made here of that rare and curious phenomenon of discolored sweat appearing after great emotional disturbance. Attention is called by Whitfield [20] to the not uncommon complaint in very neurotic patients of angiospasm of the fingers, so-called "dead fingers." My purpose in this paper, however, is more concerned with such psychic cutaneous reactions amenable to psychotherapy, of which the following case is an example:

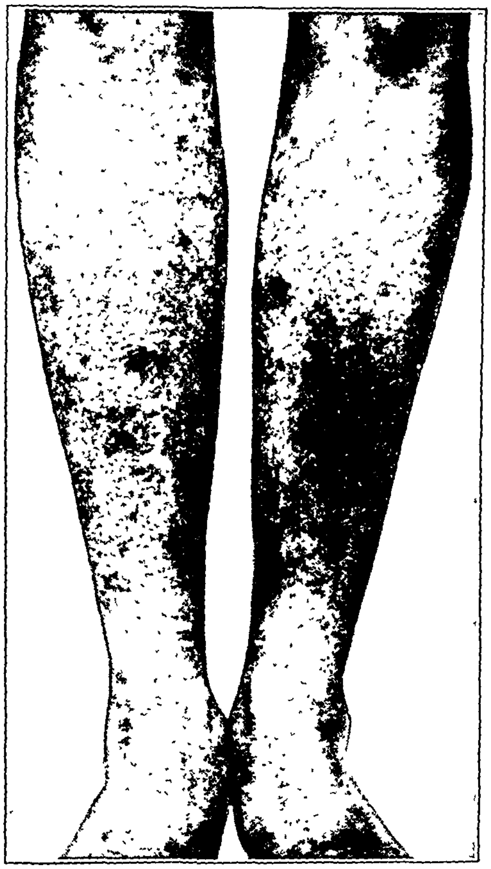

Fig 1.—Neurotic excoriations: a self inflicted skin lesion in an acarophobiac patient; superficial ulcerations, scars and pigmentary remains of former lesions.

Case 7.—A young lawyer complained for some months of flushing of the entire face, appearing immediately after shaving and persisting several hours. He had the alternative of going into court with an unshaven face or a very reddened face which caused him considerable embarrassment. He was treated by others with local applications, which were of no avail. A reconditioning of his psychologic reaction was forthwith attempted. I clearly explained to him the psychogenesis of his complaint and told him that if he could go about the act of shaving the following morning oblivious to the consequences of his prior acts of shaving he would be cured of this reaction. This was explained to him only on one occasion, following which the flushing rapidly disappeared. He has remained free from the reaction every since, which is now four years.

Other localized flushing not following any specific act is seen as a transitory erythema usually involving the face, neck and chest. This cutaneous neurosis appears following the slightest emotional disturbance. One patient with this complaint I purposely engaged in an animated conversation; I saw an erythema appearing on the upper part of the chest slowly spread, involving the neck and face. The erythema varied in degree and extent, so that a mottled appearance was produced. This erythema is unlike that of an ordinary blush, as its origin is different; moreover, it may reappear soon after disappearing; it frequently is mottled and is of longer duration.

Indeed, this vasomotor instability which causes flushing is in some cases associated with acne rosacea, in which it probably plays an etiologic rôle. When another patient, a young woman with acne rosacea, consulted me, at the beginning of the consultation her face, neck and chest were quite red, like a well pronounced sunburn. Later this erythema partly disappeared, producing a mottled effect, and at the end of the consultation entirely disappeared. She was self conscious and timid and quite cognizant of the flushing, which caused considerable embarrassment and annoyance. The treatment of this phase of her condition, I informed her, depended largely on herself relative to the development of a mental poise.

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[18] The well known cutaneous phenomenona which emotion causes—pallor, blushing, horripilation, or goose flesh, and perspiration—are not discussed, nor are the cutaneous disturbances in hysteria.

[19] The nervous element has been considered by many in a discussion of the pathogenesis of eczema.

[20] Whitfield, A.: Etiology of Skin Diseases, Lancet 2: 61 (July 9), 168 (July 23) 1921.

[21] Vignolo-Lutati, C.: Canizie precoce e psicopatie di guerra, Policlinico 25: 680-684 (July 21) 1918.

In the treatment of localized flushing in the aforementioned patients, psychotherapy is of considerable value.

I believe that some cases of hyperhidrosis of the palms are amenable to psychotherapy.[22] In neurotic patients, one should penetrate into the psychogenesis of the complaint.

THE DERMATOPHOBIAS

Since it has been estimated by medical psychologists that one out of every ten persons is beset in some degree by a fear of one kind or another, it is not surprising that the dermatologist not infrequently encounters phobias having a cutaneous expression.[23]

The dermatophobias, as well as the conditions to be considered later, constitute, of course, a psychasthenia and occupy a position on the border line of dermatology. The dermatophobias, like other phobias, are usually seen in neurotic persons. The morbid idea constituting the phobia may exist virtually as a delusion, or as l'idée fixe of the French.

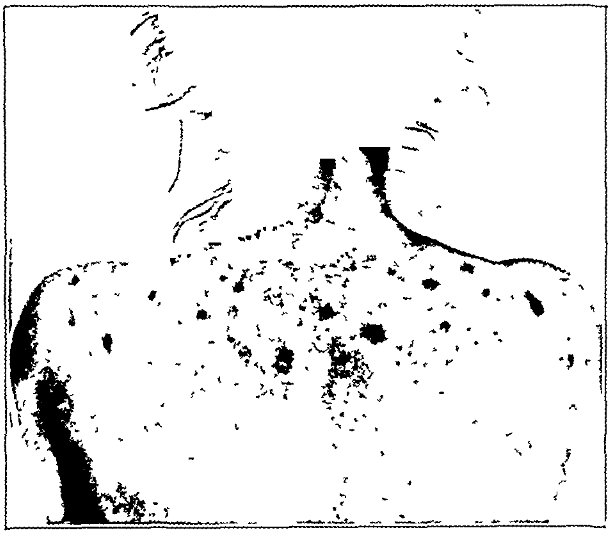

Fig. 2—Neurotic excoriations in an insane person. self produced crustaceous ulcerations and scars of involuted lesion

Acarophobia.—The most common dermatophobia is acarophobia, the fear of parasites. This phobia may develop following an attack of scabies, in which event the patient cannot be convinced that the disease is cured; as a complication of a generalized pruritus, or spontaneously. Any portion of the skin surface may be the site of the phobia. The morbid concept of the patient is to the effect that the skin is infested with insects or parasites. In order to remove them, as well as to relieve the usually accompanying pruritus and other subjective symptoms, the involved area is scratched and dug with the finger nails, and not infrequently a sharp pointed instrument is employed. These procedures temporarily appease the patient, since it is believed that the blood withdrawn consequent to the manipulation of the skin is evidence that the offending organism is removed. These mental symptoms are not continuous but are intermittent, occurring in attacks, with varying intervals of comparative calm.

The aforementioned manipulation of the skin results in a traumatic dermatitis particularly characterized by dug out appearing ulcerations, and forms one type of a group of self inflicted lesions of the skin called neurotic excoriations of the skin.

Rupophobia.—Patients with rupophobia, the fear of dirt, are at times encountered by the dermatologist. Some of these patients present a traumatic dermatitis, or a self inflicted lesion of the skin. In patients presenting the characteristic features of the latter lesions, one should penetrate into the psychogenesis in order to apply the appropriate psychotherapeutic measures.

Sutton[24] reports the case of a young woman who for three years had a dermatitis of the hands; about twenty times a day she would thoroughly wash and scrub her hands and then apply antiseptics. It was learned that her husband had contracted gonorrhea prior to their separation. Through fear of infection she was constantly washing her hands.[25] The patient was successfully treated with psychotherapy.

A fear of cancer is at times encountered in persons past middle age; these cases properly belong in the group of the algies of the French. Such patients direct attention to the normal papillae of the tongue, for example, as evidence of the cancer. Here, again, pain and other subjective symptoms may appear at the site of psychic fixation, an instance of what Blocq classifies as the topalgias, to which reference has already been made. The following is an example: A patient who complained of an aggravated form of so-called "burning tongue," the psychogenesis of which concerned a morbid concept concerning cancer of that organ, was much benefited by a full analytic discussion of his symptoms.

Very commonly patients are seen, mostly young women, with a mild acne, relatively few superfluous hairs, a mild acne rosacea or, indeed, any relatively insignificant facial blemish or mild skin disease, which produces a profound psychologic reaction out of all proportion to the extent and degree of facial involvement. Frequently, in the cases with acne, the psychologic reaction is accentuated by a too sympathetic mother. Treatment of this phase must not be neglected.

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[22] Klauder, J V.: Pyschic Hyperhidrosis of the Palms and Soles, Arch. Dermat & Syph. **11**: 694 (May) 1925

[23] Syphilophobia is frequently encountered by the dermatologist It is not included here among the dermatophobias. The end result in the treatment of a certain percentage of neuropathic syphilitic patients is a degree of syphilophobia, the outcome of extrinsic suggestion. These patients live in the expectation of the appearance of some new symptom or some new cutaneous lesion The prolonged treatment required in syphilis, the uncertainty of a criterion of cure and the sometimes resistant positive Wassermann reaction are important contributory factors in the production of syphilophobia The neuropathic patient whom it is difficult to convince that he is cured is familiar to all physicians treating syphilis In the initial treatment of this type of patient, considerable discretion should be exercised by the physician in discussing prognosis This type of patient rarely neglects treatment Encouragement and reassurance on the part of the physician are indicated Too frequent Wassermann tests, if positive, are harmful in view of the profound psychic effect on the patient In those who are not infected, a "slightly positive" Wassermann reaction and an unwarranted diagnosis of syphilis are important contributory factors in the production of syphilophobia. Erythrophobia, the fear of blushing, is not included here among the dermatophobias, although Thibierge includes it in his paper (Les dermatophobias, Presse med **5**: 13 16, 1898) A more detailed discussion of the dermatophobias may be found in Thibierge's paper.

[24] Sutton, R. L.: Bromidrosiphobia, J. A. M. A. **72**: 1267-1268 (May 3) 1919.

[25] In this patient it is probable that there were other deep seated subjective causes in addition to the husband having had gonorrhea This probable displacement was like Lady Macbeth's feeling that by washing her hands she might free herself from her deeper stain.

Mention may also be made here to peladophobia, fear of baldness, particularly manifested in men. In the more severe cases of peladophobia, the social intercourse of the patient is much restricted, developing into what is virtually a phobia of society. Janet[26] groups these and similar cases in the category of his l'obsession de la honte du corps. He records a number of instances, one of which concerned a young woman who was horribly tormented by the thought of a small scar on the ala of her nose. The milder cases of the condition under discussion are sometimes very amenable to psychotherapy and reeducative measures, the latter being directed particularly at the development of a mental poise.

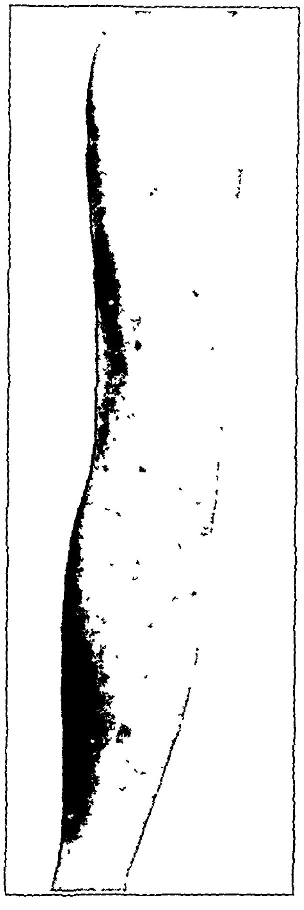

Fig. 3.—Dermatothlasia: superficial ulcerations and scars, the result of an uncontrollable desire of the patient to pick or rub the skin.

Bromidrosiphobia.—This is a rare phobia referable to the skin and its appendages. Few cases have been reported. The two cases reported by Piffard[27] were both of men who firmly believed that their perspiration was very foul smelling, which belief prevented them from mingling in society. Sutton's[24] patient was another man who was firmly convinced that the perspiration from his trunk and axillae, and later only his feet and ankles, was very disagreeable. He compared the odor to that of "rotten onions," on account of which his friends deserted him and his married children did not care to have him come to their homes.

The following is a case of bromidrosiphobia which I recently observed:

Case 8.—A boy, aged 18, was of the firm opinion that the perspiration, particularly from his trunk and buttock, had a very unpleasant odor, which he described as "musty" comparable to sweaty underwear in murky weather. This odor, he stated, persisted in all his outer garments after he had worn them a while. An examination concerning his allegation was entirely negative. By reason of this odor, which made his presence obnoxious to others, he left school and voluntarily left several places of employment. He avoided as much as possible riding in trolley cars; on the occasions in which he did, passengers next to him, he alleged, changed their seats or left the car. He rarely attended the moving pictures; if so his aforementioned experience was repeated. On one occasion, when he was at the home of a girl friend, she walked up to him from a corner of the room in which they were, and the fear that she would become cognizant of this unpleasant odor terrified him, his thoughts became confused, he experienced palpitation of the heart, and a strange cold sensation appeared in his legs. This reaction doubtless manifests the symptom complex of fear which by psychotherapy this psychologic reaction is reconditioned. A dream study was unfruitful. It was not possible to question his early associates, particularly servants, in order to elicit a basis of his phobia. On questioning the patient it was determined that his cognizance of the unpleasant odor first became manifested about six years before, soon after an occasion in which one of his schoolmates was chided by his companions for "smelling funny." The patient mentally sympathized with his classmate and was glad that he (the patient) was not affected.

Trichotillomania.—This condition, originally described by Hallopeau,[28] is a psychoneurotic manifestation characterized by an abnormal desire on the part of the patient to extract forcibly one or more hairs of the bearded region, eyebrows or scalp. Trichokryptomania[29] is an allied disorder in which the hairs are broken off instead of pulled out. These procedures result in peculiar, frequently irregularly shaped patches or partial baldness. These features suggest the factitious nature of the baldness and lead to a discovery of the cause; the patients are usually reticent concerning the practice of pulling out or breaking off the hairs. Other evidences of a psychasthenia are not uncommonly associated. Raymond refers to trichotillomania as the tic de l'épilation, since he regards it as an expression of a tic.

In the foregoing regard it is of interest to note that Davis[30] reports an epidemic of a patchy type of baldness, unlike ringworm or alopecia areata, occurring among seventy-four out of 300 girl orphans. He attributed this condition to scratching or rubbing the scalp as a result of mass suggestion.[31] In a second outbreak of only forty-two cases, Davis attributed the lessened number to a prompt isolation of the affected patients. The foregoing described morbid state may be amenable to psychotherapy, as evidenced in the favorable results obtained by this method of treatment in the cases reported by Sutton and by Pernet.[32]

Dermatothlasia.—Under this name Fournier[33] first described a morbid state, similar to the ones previously considered, which is characterized by an uncontrollable desire of the patient to scratch or rub one or more areas of the skin. This practice may give rise to excoriated lesions. Fournier thought perhaps it was an atavistic expression, comparable to the scratching of certain animals and birds and comparable also to the self mutilation of certain psychopathic patients. An instance of the latter is seen in Figure 2; the patient was insane.

Figure 3 shows self-produced lesions in a girl, aged 7, who experienced what was apparently an uncontrollable desire to scratch or rub different areas of the skin, particularly the posterior surfaces of the arms and legs, and the buttocks.

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[26] Janet: Les obsessions et la psychasthénie, p. 33.

[27] Piffard: Materia Medica and Therapeutics, New York, William Wood & Co., 1881, p. 152.

[28] Hallopeau: Alopecia par grattage (trichomania ou trichotillomania), Ann. de dermat. et de syph. **10**: 440-441, 1889.

[29] Sutton, R. L.: Trichokryptomania, J. A. M. A. **66**: 185 (Jan. 15) 1916.

[30] Davis, H.: Pseudo-Alopecia Areata, Brit. J. Dermat. **34**: 162 (May) 1922.

[31] To the physician engaged in industrial medicine the psychologic aspect of certain skin diseases may be of particular importance, as manifested in the following. In cooperation with the medical office of a corporation, I studied an outbreak of an eczematous dermatosis among the women employees, of whom there was a great number who worked in close contact with one another. The dermatosis was not regarded as contagious, although at first ringworm was suspected. The continued development of new cases produced a panicky condition among the employees, who were fearful of contracting the "dreadful disease." Our suspicion that mass suggestion was playing some rôle in the continued appearance of new cases was confirmed when we obtained evidence that at least some of the girls were employing energetic means, relative to scrubbing the hands and using antiseptics, to prevent "contracting" the skin disease. The latter measure, I believe, was an important etiologic factor in the causation of the eczematous lesions in some cases. In the foregoing instance, and this well applies to patients with itching, prompt isolation of the patient from a large number of fellow employees should be considered from the psychologic view.

[32] Pernet, G: Trichotillomania Associated with Other Factitious Manifestations, Brit. J. Dermat. **27**: 85-86, 1915.

[33] Fournier, H: La dermatothlaise, J. malad. cutan. et de syph. **10**: 225-231, 1898.

In the same category as dermatothlasia may be placed self inflicted lesions of the skin grouped under the heading of neurotic excoriations. These have been described under different names by a number of writers and have been notably described by Adamson,[34] MacKee[35] and by Pusey and Senear.[36] Brocq's excoriated acne of young girls (Fig. 4) is also placed in this group. The involved area is usually at first pruritic and may have been the site of some insignificant skin lesion. As a result of what is apparently an uncontrollable desire to pick or dig with the finger nail or some other agent, oval or irregularly shaped excoriations or ulcers are produced. Pigmented areas and scars, the result of involution of former lesions, may also be seen. In the excoriated acne of young girls, manipulation is directed at the existing acne lesions involving the face.

Neurotic excoriations are distinct from a factitious dermatitis.[37] Self inflicted lesions of the skin, produced for the purpose of deception, are seen in certain hysterical young women, the psychogenesis of which is to arouse sympathy, and also in malingerers. In the condition under discussion there is a clear recognition by the patient of the unreasonable nature of the act. In view of this and since it manifests a defective self control, it constitutes a psychasthenia, other evidences of which may be manifested.

Neurotic excoriations exist in a variable degree of severity. The milder cases are, of course, more amenable to treatment with psychotherapy, which is directed at the psychic fixation by distraction and voluntary reeducation, or more properly by autoreeducation. Treatment, however, in a large measure depends on the nature of the psychogenesis. Self inflicted lesions of the skin, grouped as neurotic excoriations, have a variable psychogenesis. Some, perhaps, are an expression of a tic, others an expression of a phobia. An instance of the latter is recorded here. Still others may be among the topalgias of Blocq, or among Janet's l'obsession de la honte du corps. In the latter cases, manipulation is performed as a result of the anxiety of the patient to effect a disappearance of the lesion, which occasions in the patient's mind an obsession of shame. This particularly applies to cases of excoriated acne in young girls.

1934 Spruce Street.

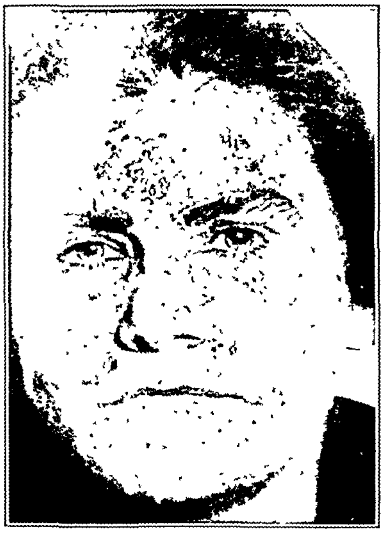

Fig. 4.—Neurotic excoriations in a patient with acne of the type of Brocq's excoriated acne in young girls: The primary condition was a mild acne, the patient produced a secondary traumatic dermatitis through constant manipulation of the acne lesions.

ABSTRACT OF DISCUSSION

Dr. Charles M. Williams, New York: I hope that Dr. Klauder will give more details of the psychic treatment he follows. Many of these patients are of low intelligence, and understand very little English. Their complaints are out of all proportion to the discoverable lesions, and largely psychic in origin, but how can we persuade them of the fact?

Dr. John H. Stokes, Philadelphia: Transfer from a rural to a city practice leads one to feel that dermatoneuroses are more common under the stress of city life and among city types. Treatment is, of course, the most interesting problem. Two invaluable expedients in my experience with the reasonably intelligent patient are, first, to rationalize the situation and teach a philosophy of evasion, and, second, to drill him or her in the mechanics of relaxation. Most patients develop the psychic background of a dermatoneurosis by trying to do something which they think they should do, but to which they feel they are not equal. Once this impulsion complex can be identified and the patient persuaded that there is a way around instead of through the situation, he makes the first step toward recovery. At times one must really preach the hedonism of which Robert Louis Stevenson has spoken. Turning points arise in the lives of most intensely civilized individuals in which the human frame and spirit seem unable to endure one single thing more. At this point the dermatoneurosis develops. If the patient, under his physician's guidance, returns over the road to the point at which the impasse appears, he can be taught to go around it, turn the corner on it instead of going up in the air. The teaching of the mechanics of relaxation is a complicated affair, of which muscle relaxation is the chief beginning. In ordinary office conversation, if one shows the patient how to let go of his diaphragm and release the tight, wound up feeling at the back of his head, the response is frequently surprising. The dermatoses with a vasomotor background make the most striking response. The belief that there is a psychoneurotic factor in pruritus and dermatitis may become an obsession in the physician who looks for these things to the exclusion of everything else. One should never be carried away by them but observe Dr. Klauder's injunction to carry through a complete physical and laboratory examination.

Dr. J. Frank Schamberg, Philadelphia: Dr. Klauder deserves great credit for bringing before this section a paper relating to the psychic element in a various number of dermatoses. That there is a large element of truth in this there can be no doubt. I recall a young man who had pediculosis cutis, which was easily cured but the itching was never cured. We are all familiar with the cases of dermatophobia in which the patient thinks some insect is under the skin. They frequently will bring in a small piece of skin and ask to have it examined under the microscope, as they are sure some insect is there. These are psychoneurotic cases. I would add to the caution Dr. Stokes has mentioned that we do not allow ourselves to be drawn into this line of thought to the exclusion of other methods of investigation.

Dr. Erwin P. Zeisler, Chicago: I was particularly interested in Dr. Klauder's discussion this afternoon. Practicing, as I have for ten years, in a large city I can recall very few cases of pruritus due to psychic disorders. I think if we exclude the senile bath and winter pruritus there are very few cases for which some pathologic basis cannot be found. I recall a case seen not long ago that had been treated by an eminent dermatologist for a year as a neurotic pruritus without relief. A chemical examination of the blood showed an excess of bilirubin, and on account of gastric symptoms.

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[34] Adamson, H. S.: Acne, Urticaria and Other Forms of Neurotic Excoriations, Brit. J. Dermat. 27: 1-11, 1915.

[35] MacKee, G. M.: *Neurotic Excoriations*, Arch. Dermat. & Syph. 1: 256-269 (March) 1920.

[36] Pusey, W. A., and Senear, F. E.: Neurotic Excoriations with Report of Cases, Arch. Dermat. & Syph. 1: 270-276 (March) 1920.

[37] Some writers quote Pindar as manifesting the antiquity of dermatitis factitia. The meaning of "self caused ulcers," in the following passage from Pindar (The Odes of Pindar, English translation by Dawson and Turner, p. 63), is plainly endogenous as compared with exogenous ulcers: "And then he bore and gave him to the Magnesia Centaur, to teach him how to cure manifold diseases for mortals. Those, therefore, as many as came afflicted with self-caused ulcers, or wounded as to their limbs, either with gleaming brass or by the far hurled stone, or wasted as to their frame by the summer's fire or winter's cold, freeing different persons from different pains."

a laparotomy was performed and a partial obstruction of the ampulla of Vater was found, with a marked pancreatitis. The operation gave complete relief from the pruritus. There was no jaundice and yet there was enough obstruction to the flow of bile to produce an excess of bilirubin in the blood. In several other cases a chemical analysis of the blood showed either an excess of bilirubin or of the blood sugar sufficient to account for the pruritus. I think we should not label these cases as neurotic or psychic until we have exhausted every other possible cause.

Dr. J. V. Klauder, Philadelphia: I am posing only as a dermatologist endeavoring to apply some of the principles of medical psychology in the treatment of the cutaneous neuroses. I feel somewhat like apologizing for presenting a paper that could have been better presented by a psychiatrist or a psychologist. We have all seen patients with a cutaneous neurosis, for example, pruritus, who return to us day after day still complaining of their symptom. It was an endeavor to do something for these patients, outside of applying local antipruritic medicaments, that led me to undertake this study. It is important that these patients be thoroughly examined. We all know that organic conditions may be the underlying cause. Much time is required in taking a history. Particular attention should be directed to circumstances leading up to the appearance of the symptom, in order to obtain a clue as to the possible psychogenesis of the complaint. I do not believe psychotherapy is applicable to the type of case Dr. Williams mentioned. If the patients are not intelligent, the method is not fruitful of results. As to the exact method of application of psychotherapy, time did not permit detailing this treatment. My paper goes into this in more detail. Dr. Stokes mentions some of the important principles. In some cases, if we urge a comprehension of the psychogenesis of the symptom on the patient, this is one important application of psychotherapy; the patient frequently responds by a rather prompt disappearance of the symptom.

THE SURGICAL TREATMENT OF VARICOSE VEINS OF THE FEMALE PELVIS *

LUDWIG A. EMGE, M.D.
SAN FRANCISCO

The last few years has witnessed an ever widening interest in the disturbances in the venous circulation of the female generative organs. Controversies relative to pathology, symptomatology, diagnosis and treatment are as lively today as they were in 1889, when Dudley[1] presented his views on the subject before the New York Obstetrical Society. Since 1890 the subject has appeared periodically in the literature without materially changing the basic facts set forth by Dudley.

In regard to treatment, the general opinion still favors destructive surgery. In a preliminary report on clinical and private material, I[2] have pointed out that drastic methods can, in the vast majority, be replaced by constructive surgery. Further experience with this method both in private practice and in the service of the Woman's Clinic of the Stanford School of Medicine convinces me still more firmly of the feasibility of this method. Figures in this present report are taken from observations on twenty-four private patients. A discussion of the literature and of the clinical material will appear elsewhere.

In dealing with venous disturbances of the female pelvis, one rarely sees a definitely circumscribed varicocele alone. It commonly forms a part of a general "varicoid" disturbance involving one or more divisions of the ovarian and uterine circulation. It is therefore more comprehensive to designate this condition as "varicose or varicoid veins of the female pelvis," in preference to "varicocele" or similar terms. The figures in Table 1 will serve as an illustration. These figures indicate the great variations in the location and extent of the regions affected.

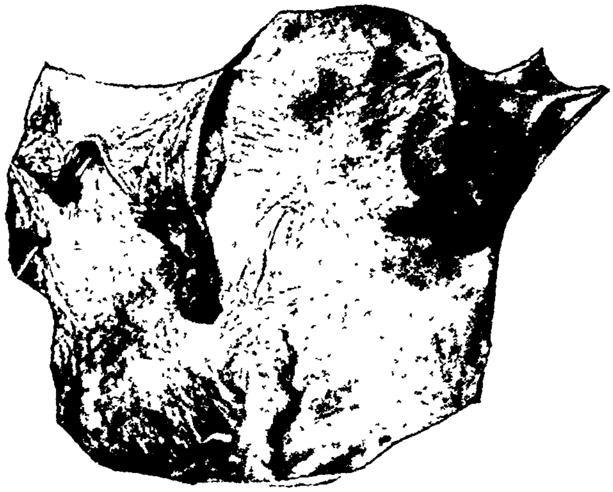

Fig. 1.—The generative organs and pelvic peritoneum of a woman, aged 30 (necropsy specimen). The sacro uterine ligaments and uterorectal muscle or ligament stand out plainly. The ovaries lie directly over the vascular area of the peritoneum, which is commonly affected by varicosity formation.

Since making my previous report, I have had occasion to examine some forty clinical and private patients in whom at operation large pelvic varicosities were found. I have become convinced that the preoperative diagnosis is by no means as easily made as I originally stated. In Tables 1 and 2 historical, diagnostic and pathologic findings have been correlated. The vagueness of the local findings makes a definite diagnosis quite difficult. Often it can be definitely arrived at only during an exploratory operation. It is therefore of greatest importance to avoid placing these patients in the Trendelenburg position until after pelvic explora-

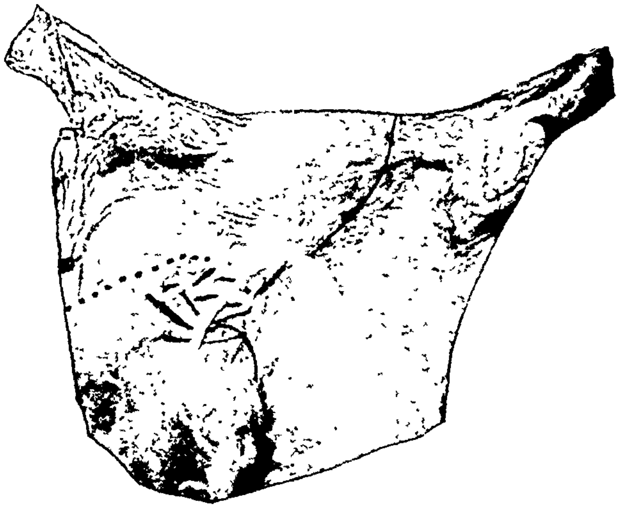

Fig. 2.—The mattress suture described is in place. The needle is in the rectal danger area and should not be carried to this point. The heavy suture material here is used for the sake of clearness. The peritoneal position of the ureter is indicated by a dotted line. The suture is a safe distance from the uterine circulation and the ureter.

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] Dudley, A. P.: New York M. J. 48: 146, 1888.

[2] Emge, L. A.: Surg., Gynec. & Obst. 32: 133 (Feb.) 1921.

tion, since elevating the pelvis above the level of the shoulders will stop venous backflow, allowing the distended veins to collapse.

There are several types of venous disturbances of the female pelvis which are divided into two main groups, temporary and permanent dilatations. Hertzler [3] points out that temporary dilatations are of a static type, merely representing an exaggeration in size of the vessels normally visible, while permanent dilatations represent a reactive type resulting from a local predisposing cause. It is not always easy to find the dividing line, since the resulting symptoms are common to the two types. The temporary type falls into the class of general pelvic congestion and commonly responds to nonoperative measures. The permanent type must be considered a chronic condition resisting all medical treatments, and therefore constitutes a surgical entity.

TABLE 1.—*Varicosities Observed at Operation*

LOCATION	
Bilateral:	
Broad	7
Broad s	3
Broad s and pampiniform plexus	3
Broad plexus	1
Ovarian veins	5
Ovarian veins and pampiniform plexus	1
Right:	
Broad ligament base, ovarian veins, pampiniform plexus	1
Ovarian veins	1
Left:	
Ovarian veins	1
Others:	
Rt. broad ligt. base, rt. ov. veins, left pamp. plexus	1
Total	24

RELATION TO PAIN			
Pain		*Varicosities*	
Bilateral	9	Bilateral	20
Sacral	7		
Right	7	Right	3
Left	1	Left	1

DIAGNOSIS	
Varicosities by examination	8
Varicosities by deduction and examination (8 and 4)	12
Parametritis and displacements	4
Displacements	8

TABLE 2.—*Symptoms and Associated Disease Conditions*

SYMPTOMS			
Pelvic pain:		Other complaints:	
Bilateral	9	Dyspareunia	3
Left	1	Dysmenorrhea	13
Right	7	Hydrorrhea	5
Sacral backache alone	7	Menorrhagia	5
Influence of position:		Constipation	7
Worse upright; better recumbent	12	Onset at childbirth	8
Indifferent	12	Married	12
		Single	12

PATHOLOGIC CONDITIONS FOUND AT OPERATION Aside from Varicosities			
Retroversion	14	Appendix grossly abnormal	12
Retroversion and descent	6	Cervical disease	8
Descent alone	3	Perineal relaxation	5
Parametritis	2	Cystic ovaries	12
Salp. isthm. nod	1	Small myomas	1
Sigmoidal adhesions to brd. lig.	3		

WHITE BLOOD COUNT			
Under 6,000	14	Under 10,000	3
Under 7,000	3	Under 11,000	2
Under 9,000	2		

The latter type may again be subdivided into two groups. The first includes all venous dilatations that have arisen as a result of a disturbed support or control of the venous channels without presenting any definite anatomic changes in the vessel wall. The second includes those in which anatomic changes have taken place within the vessel wall, usually traceable to inflammatory lesions. True varicoceles are practically confined to the latter division. In the first group, functional changes precede the organic changes, while in the second group, organic lesions form the starting point. The first group is by far more common and responds to constructive surgery. The second is rarely seen and as a rule demands resection of the affected venous channels. In the series reported here, twenty-three fall into the first and one into the second group.

In making my observations on the extent of venous disturbances during pelvic exploration, I have been impressed with the frequency with which the circulation of a certain portion of the pelvic peritoneum is involved. Directly below the ovary there is an irregular area bounded by the infundibulopelvic and utero-ovarian ligaments above, the uterus and sacro-uterine ligament anteriorly and below, and the mesosigmoid posteriorly. This area harbors an extensive circulation which anastomoses freely with the inferior ovarian plexus, the ovarian and uterine veins, and to some extent with the peritoneal covering of the sigmoid and rectum. Blood vessels surrounded by an abundance of nerve fibers and ganglions traverse this area in close proximity to its fibrous coat. Any prolonged distention of the veins of the generative organs soon involves the veins of this peritoneal area. Nerve fibers are pressed on, and the resulting pain is translated into the ovary because it so commonly is in direct contact with this peritoneal region (Fig. 1). In examining, it is therefore of importance to palpate this area by monomanual, rectovaginal examination in order to differentiate true ovarian from broad ligament pain. During the usual vaginal-abdominal examination the ovary is invariably palpated simultaneously, and the actual seat of pain becomes doubtful. When it is not possible to feel definite venous enlargements, pain complained of can thus be localized, and in the absence of inflammatory lesions of the neighboring organs becomes suggestive of venous disturbances.

There is an intimate functional relation between the pelvic blood vessels, especially the veins, and the musculofibrous structures of the pelvic peritoneum and basal pelvic ligaments. The excellent anatomic study of the sacro-uterine ligaments by Blaisdell [4] is most enlightening in this respect. This investigator points out the following facts:

The basal ligaments of the pelvis, i. e., the sacro-uterine, the plicovaginal, the transversum colli and the recto-uterine ligaments, are so closely allied in their anatomic and physiologic relationship that their action is interchangeable.

These ligamentous structures are made up of a definite, interlaced meshwork of fibro-elastic fasciculi and muscle bundles, which take their origin in the fibrous coat of the peritoneum and spread fanlike toward the pelvic fascia. In their onward course they attach themselves intimately to the generative organs, ensheathing their blood vessels closely, and anchor themselves firmly to the pelvic fascia.

In a state of physiologic rest this meshwork remains open, while it closes when in a state of traction, thus forming a potential or transitory ligament. The normal tonus of this structure is sufficient to maintain a variable state of traction, which in turn produces a controlling pressure on the blood vessels it ensheathes. Any interference with this action invites venous distention.

This fibro-elastic suspensorium of Blaisdell and the perivascular tissue of Cameron [5] are functionally inseparable and not only constitute a large part of the pelvic support but are indispensable in the control of a normal venous and lymphatic pelvic circulation.

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[3] Hertzler, A. E.: Surg., Gynec. & Obst. **17**: 60, 1913; in Mosley: The Peritoneum, 1919, p. 137.

[4] Blaisdell, F. E., Sr.: Anat. Rec. **12**: 1, 1917.

[5] Cameron, John: J. Anat. & Phys. **42**: 438, 1907-1908.

The recognition of these facts explains the rationale of the surgical treatment set forth below. Owing to the fact that the fibro-elastic suspensorium that controls the normal flow in the venous circulation of the generative organs is firmly anchored to the peritoneum of the sacro-uterine, uterorectal and plicovaginal ligaments, it is possible, by proper shortening, to produce a state of permanent traction and normal compression of the veins in question. By elevating and anteflexing the uterus slightly this traction is increased, and a certain amount of strain is taken from the newly made basal ligaments. This prevents venous backflow from above, as distention of the vessels is controlled. Congestion of the broad ligaments and ovaries is alleviated. Pressure pains no longer occur, and normal menstruation returns or is established. The presence of enlarged cystic or sclerocystic ovaries, notwithstanding the report of Chalier and Dunet,[6] is merely the result of long standing congestion, as I have pointed out.[2] These ovaries are or become functionally normal after restitution of a normal venous state. They should never be removed unless they present advanced inflammatory lesions.

Elsewhere, I have pointed out that, after certain types of shortening of the sacro-uterine and round ligaments, even very large varicose veins will disappear at the completion of this operation. The operation spoken of consists of a shortening of the sacro-uterine ligaments together with a "shirring" and downward shortening of the peritoneal area described above. This operation, aided by a round ligament transplantation, raises the level of the uterus into an exaggerated normal pelvic position and creates a bilateral peritoneal shelf, the permanence of which has been verified by direct examination in two patients after more than two years. One patient died of pneumonia and came to necropsy; the other had a cholecystectomy, and the pelvis was palpated.

The operative procedure (Fig. 2) is not without danger, and the following salient points should be observed strictly:

1. One should avoid the uterine circulation by anchoring the suture (Pagenstecher linen or silk threaded on a Ferguson needle) in the cervical tissue just above the insertion of the opposite sacro-uterine ligament.
2. One should avoid the uterine vein by slanting the first ascending limb of the continuous mattress suture away from the angle formed by the uterus and sacro-uterine ligament.
3. The peritoneal covering of the recto-uterine fold or muscle must be included in the first mattress suture.
4. The ureter should be located. It travels directly beneath the peritoneum to a point located within from 1.5 to 2 cm. from the uterine angle. The ureter should not be approached closer than 1 cm., otherwise it will be kinked.
5. The peritoneum should be picked up with tissue forceps and the needle passed at avascular points. One should never place the suture by blindly passing the needle into the peritoneum. It invariably leads to hematoma formation.
6. One should calculate the space left as entrance to the culdesac to avoid rectal embarrassment. The suture should never be passed as far posterior as the rectal attachment of the uterorectal muscle. It otherwise will lift up the rectum and produce sacculation. It also may invite infection, as the rectal wall may accidentally be penetrated by the needle.
7. The sutures should be tied before the round ligaments are shortened or transplanted, as otherwise too great a tension may be produced.

In regard to the round ligament fixation that has developed during the last eight years, it has been a principle to leave the uterus within the pelvis in as normal a position as possible except that the level is slightly raised. While this operation is based on the Adams-Alexander-Gilliam principles, it materially differs from them in that it does not leave the fundus hanging above the pelvis, nor does it approach ventrifixation. The uterus is left in an excellent anteversion-flexion and in good mobility.

The technic is as follows:

The anterior pubic spine is located after the rectus muscle has been freed from its fascia. The respective round ligament is put on tension by lateral version of the fundus. A curved clamp is passed just around the lateral margin of the rectus muscle far enough forward and downward to reach the peritoneum just above the round ligament entrance. At this point there is very little danger of injuring the inferior hypogastric, the femoral vessels or the bladder. Dexterity determines the next step. The curved clamp is passed under the peritoneum along the superior surface of the round ligament to the point that determines the desired elevation and anteflexion of the fundus to be achieved. By opening and shutting the clamp gently, one can free the ligament sufficiently from the excess peritoneum without penetrating it. Some operators will find it easier to penetrate the peritoneum just above the round ligament entrance and to secure the ligament in that way. The ligament then has to be stripped of its peritoneal covering. In either case the end nearest the fundus is anchored under the rectus fascia near the anterior pubic spine. This flexes the uterus normally. The remainder of the round ligament is fastened under the fascia in the shape of an open loop, as described by Crossen.[7] Pagenstecher linen or fine chromic catgut is used as suturing material and is passed through only one third of the ligament to prevent atrophy from anemia. Occasionally it is necessary to advance the ligamentous insertion at the cornua uteri, as otherwise flexion cannot be obtained.

If there exists any other pathologic condition, especially cervical and perineal, it is needless to say that it should be corrected prior to the abdominal operation.

TABLE 3.—*Operative Procedures and Results*

	Relieved	Not Relieved
Shortening of sacro-uterine and round ligaments.....	21	
Gilliam suspension alone..........................	..	1
Kelly-Neel susp. and shortening sacro-ut. ligts.......	1	
Baldy-Webster susp. and shortening sacro-ut. ligts...	1	

Associated Operations:

Myomectomy	1	Shortening of ovarian ligaments	1
Appendectomy (routine).....	18	Left salpingo-oophorectomy..... (varicocele)	1
Pelvic adhesions resected....	4	Trachelorrhaphy	4
Dilation and curettage......	2	Perineorrhaphy	5
Cauterization of cervix......	1		

In Table 3, operative procedures and end-results are outlined. Twenty-one patients were operated on by the method described above. Three patients had different types of operation, which since have been abandoned. There is one failure in twenty-four patients, or 4.16 per cent., which is a little better than our results in clinical patients and must be attributed to the fact that all patients were handled by one operator. One patient was in addition treated by venous resection and salpingo-oophorectomy on account of definite inflammatory disturbances in the adnexa and their circulation. All patients have been observed for one or more years after operation. Four patients have borne children, two twice, without a return of symptoms. With the exception of one patient, postoperative examinations at various periods have revealed the persistence of the sacro-uterine shelves. The invariable relief from dysmenorrhea, menorrhagia and dyspareunia is striking but may be due to posture corrections of the uterus. The failure, in one patient, is attributed to lack of persistence of the sacro-uterine shelf.

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[6] Chalier, A., and Dunet, Charles: Gynecology and Obstetrics 1: 239, 1921.

[7] Crossen, H. S.: Diseases of Women, 1922, p. 53.

In reviewing the literature relative to the surgical treatment of pelvic varicosities, one finds that resection or even castration is commonly advocated. Below I have briefly outlined the various methods as I found them in the available literature exclusive of the textbooks:

Resection (excision) of veins: Dudley,[1] 1888; Hirst,[8] 1890; Miller and Kanavel,[9] 1905; Darnall,[10] 1914; Fothergill,[11] 1921; Rowse,[12] 1921; Sihler,[13] 1921; Schubert[14] (occasional castration), 1922; Castaño,[15] 1921, 1925.

Multiple ligation of veins: Kelsall,[16] 1921.

Castration: Malins,[17] 1889; Nielsen,[18] 1889; Wilson,[19] 1891.

Resection and oophorectomy: Chalier and Dunet,[6] 1921

Resection or ligation of veins and ventrifixation: Kelly,[20] 1890; Shober,[21] 1901; Wall,[22] 1916; Cotte and Jezditch,[23] 1923.

Ventrifixation: Engelmann[24] (occasional castration), 1922.

Shortening of sacro-uterine and round ligaments: Emge[2] (occasional resection), 1921.

As far as I can learn, Engelmann is the only operator who, on several occasions and with good success, has utilized a constructive method, although one may not approve of ventrifixation. During a period of more than ten years, sixty-five patients of the woman's clinic of the Stanford School of Medicine have been treated with good functional result by the same or modified methods of the conservative operation as advocated in this report. The end-results in twenty-four private patients allow me to believe that the method will prove still more successful in the hands of one operator.

SUMMARY

1. The vast majority of varicose veins of the female pelvis are a direct result of damage to the fibro-elastic suspensorium. Only a small portion is the result of actual lesions in the walls of the venous channels.

2. Since the fibro-elastic suspensorium is intimately attached to the pelvic peritoneum which forms the covering of the basal ligaments of the generative organs, it is possible to obtain a normal control of the veins of these organs by increasing traction on this peritoneum.

3. This traction is obtained by shortening the sacro-uterine and associated ligaments, as stated elsewhere, and is aided by a round ligament transplantation.

4. The permanence of this procedure in regard to anatomic and functional results has been established by actual inspection and by the freedom from symptoms for from one to seven years and after childbirth.

5. Resection of veins is ordinarily unnecessary and should be confined entirely to varicosities that are the direct result of inflammatory lesions of the vessels in question.

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THERAPEUTIC RESULTS WITH CONCENTRATED SCARLET FEVER ANTITOXIN *

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In 1923, we were able to establish the hemolytic streptococcus as the cause of scarlet fever by a series of human inoculation experiments in which the strains of streptococci used fulfilled the requirements of Koch's laws.

But long before that, the association of hemolytic streptococci with scarlet fever had led to attempts at treatment with antistreptococcus serums without waiting for proof of the etiology. These serums were frequently employed by physicians who did not credit the hemolytic streptococcus with causing scarlet fever, but regarded it as an important secondary invader.

In 1902, Moser of Vienna described the first antistreptococcus serum for use in scarlet fever. His serum was obtained by immunizing horses with living serum-broth cultures of streptococci isolated from the heart's blood of fatal cases. Moser noted that following the administration of his serum, there was an improvement in the symptoms of scarlet fever commonly attributed to the toxemia and a fading of the rash.

At intervals during the last twenty-three years, various antiscarlatinal serums have been described. They have all been obtained by immunizing animals with cultures of streptococci. None of them have differed essentially from the serum reported by Moser in 1902.

Antistreptococcus serums have been on the market for many years. At first they were employed extensively, but gradually fell into disuse. Their failure has been due to lack of specificity and lack of potency in some instances as well as to frequent and severe serum reactions caused by the comparatively large doses of unrefined horse serum.

Following the production of experimental scarlet fever, we were able to show that the hemolytic streptococcus growing in the throat produces a soluble toxin which is absorbed into the blood stream and causes the characteristic symptoms of scarlet fever, including the rash. Recovery and subsequent immunity are connected with the production of an antitoxin capable of neutralizing the specific toxin of scarlet fever. We found that the streptococci produce this soluble toxin when growing in artificial medium, so that we were able to obtain the toxin free from living bacteria and standardize it.

With the discovery of the toxin and its corresponding antitoxin, it became apparent that the serum-broth cultures used by Moser for immunizing horses probably contained the toxin and that the resulting serum contained the antitoxin of scarlet fever. The beneficial action of Moser's serum was doubtless due to antitoxic rather than to bactericidal properties.

The specific toxin of scarlet fever has furnished a means of identifying scarlet fever streptococci and a method of standardizing the antitoxin, thus assuring both the potency and the specificity of the serum. It has also made it possible to obtain potent serums without the production of the active infection that follows inoculation of horses with living cultures. The antitoxin is obtained by immunizing horses with subcutaneous injections of gradually increasing doses of the sterile toxin.

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* From the John McCormick Institute for Infectious Diseases

* Read before the Section on Pharmacology and Therapeutics at the Seventy Sixth Annual Session of the American Medical Association, Atlantic City, N J. May, 1925

Not all strains of scarlet fever streptococci are equally good toxin producers, and it is important to select strains for immunizing the horses that produce a strong as well as a specific toxin.

We have shown that the scarlet fever antitoxin may be refined and concentrated by the method used in the concentration of diphtheria antitoxin, with an increase of potency and reduction in serum reactions. Thus, in the concentrated and standardized antitoxin, the disadvantages of the antistreptococcus serums have been, for the most part, overcome.

The basis of standardization of the antitoxin is the skin test dose of toxin. We have found that 1,000 skin test doses of toxin is an amount capable of producing transient symptoms of mild scarlet fever in susceptible adults, if given without any previous immunization. An amount of antitoxin sufficient to neutralize twenty times this quantity of toxin has been found to be an effective therapeutic dose.

Since it is undesirable to inject large quantities of even refined serum, a minimum potency requirement has been established. This requirement is such that one therapeutic dose shall not exceed 20 c.c. in volume.

The prophylactic dose should be one-half the therapeutic dose. Smaller amounts may protect moderately susceptible persons, but highly susceptible persons require the larger prophylactic doses for complete protection.

The antitoxin is put out in prophylactic and in therapeutic doses. We have avoided any mention of units other than the skin test dose because confusion between the scarlet fever antitoxin unit and the diphtheria antitoxin unit might result in errors in dosage.

The antitoxin in all our cases has been injected into the muscles on the anterior aspect of the thigh. We have employed intramuscular injections because the time saved by intravenous injection does not ordinarily justify the increased danger to the patient.

In early cases, the rash is the most convenient indicator of the action of the antitoxin. If enough antitoxin has been given, the rash will be definitely faded within twenty-four hours, and there will be a marked improvement in the general condition of the patient, especially noticeable in the most toxic cases. The improvement will be associated with a fall in temperature. Following the removal of the toxic element of the disease, the subsequent course of the temperature will depend on the presence or absence of complications. One effect of the antitoxin is the unmasking of such complications as already exist, making their recognition and proper treatment more certain.

We first studied the results in a series of 100 cases of scarlet fever in which the fifty more severe cases were selected for treatment with antitoxin, and the fifty less severe cases were used as controls. A comparison of the results in the antitoxin series and the control series left no doubt that the antitoxin shortened the course of the disease, and reduced the number and severity of complications and sequelae. Complications occurred in nineteen of the fifty control cases and in only four of the antitoxin cases. We then attempted to determine the effect of antitoxin given at different stages of the disease and the proper dosage for different clinical types of scarlet fever. Severe, and even fatal cases, may appear mild at the onset, and there is a tendency to withhold the antitoxin until it is apparent that the prognosis is unfavorable. Thus antitoxin may not be administered until irreparable damage has been done to the tissues.

There is great variation in the severity of scarlet fever. This may be attributed, in part, to the difference in degree of susceptibility as indicated by the results of skin tests, which vary from slightly positive reactions consisting of a faint pink area, barely 1 cm. in diameter, to strongly positive reactions from 3 to 7 cm. in diameter and bright red. Other factors in determining the severity may be the strength of toxin produced by the streptococcus concerned, and the localization of the organism in the body.

We have observed that in patients with sinus infections where conditions are favorable to the production and absorption of large quantities of toxin, there is often a high degree of toxemia. On account of the possibility that large amounts of toxin may be absorbed from infected sinuses, we are giving two therapeutic doses of antitoxin to patients with marked toxemia or septic complications associated with sinusitis.

A comparison of the temperature curves of cases complicated by sinus infections treated with antitoxin and similar control cases treated without antitoxin showed that, following the administration of antitoxin, the temperature dropped to a lower level, though it did not immediately return to normal, while in similar cases treated without antitoxin, the temperature remained at a higher level, and returned to normal more slowly.

One prophylactic dose of antitoxin was given to thirty-four susceptible persons after they were exposed to scarlet fever and had become infected with the specific organism, but before the disease had developed. One therapeutic dose was given in sixty-four cases of scarlet fever on the first day the rash appeared. One or two therapeutic doses were given in fifty-nine cases on the second day of the rash, and two therapeutic doses were given to twelve patients who had been sick a week or longer.

Of the thirty-four persons with positive skin tests and scarlet fever streptococci in their throat cultures, following direct exposure to scarlet fever, who were given one prophylactic dose of the antitoxin, fourteen had sore throat and fever at the time the antitoxin was given. In four, a rash was just beginning to appear. None of these thirty-four susceptible persons already infected with scarlet fever streptococci developed scarlet fever. Nor did they develop any complications. These results indicate that the prophylactic use of scarlet fever antitoxin in sufficient amounts protects even after infection has occurred.

In the sixty-four cases of scarlet fever in which one therapeutic dose of antitoxin was given on the same day that the rash first appeared, no further administration of antitoxin was required. The rash was definitely faded, in some instances it was entirely gone, and the general condition was improved within twenty-four hours. Otitis media occurred in one case. No other complications or sequelae developed in these patients who received antitoxin on the first day of the rash.

Otitis media occurred in five of the fifty-nine patients who did not receive antitoxin until the second day of the rash. And mastoid infection followed the otitis media in one of these cases. No postscarlatinal nephritis occurred in any case in which the antitoxin was given early.

Antitoxin was not given after the third day of the rash to any but those patients who had become progressively worse during the first days of the disease, and were not seen till the end of the first week of illness. With one exception, all the deaths in the antitoxin series occurred in persons who had been ill from six to ten days before the antitoxin was employed. Two adults who had been sick at home a week had anuria on admission to the hospital, and died within twenty-four hours. In each case there were many hemolytic streptococci in the blood stream, as demonstrated by blood cultures taken before death. These patients showed no improvement in the few hours that they lived after administration of the antitoxin.

Two other patients who were extremely toxic had been sick, one six days, the other seven days. The urine contained large amounts of albumin, but was not much reduced in amount. In these cases, the administration of two therapeutic doses of antitoxin was followed by rapid and uneventful recovery.

In two instances antitoxin was given to patients who were past the toxic stage of the disease. The rash was faded, and mastoid infections with thrombosis of the lateral sinus and septicemia had developed before they were admitted to the hospital. These patients showed a temporary improvement following administration of the antitoxin, but eventually died.

CONCLUSIONS

These results show that concentrated scarlet fever antitoxin is of practical therapeutic value.

They emphasize the necessity of giving the antitoxin early in the disease before complications have occurred, and before too much damage has been done to the tissues.

If administered early in the disease, and in adequate dosage, the antitoxin shortens the course of scarlet fever and reduces the number of complications and sequelae.

ABSTRACT OF DISCUSSION

Dr. William H. Park, New York: The credit for first developing an antitoxic serum for scarlet fever must be given to Moser and Savchenko. The work of Dochez and the Dicks not only confirmed the earlier results but also added to them and convinced us that it really was a specific antitoxic serum. They were the first to test the serums for antitoxic potency and to supply a standardized serum for therapeutic purposes. So far as the testing of the serum goes, the Schultz-Charlton reaction following intracutaneous injections of dilutions of serum will give a potency test nearly as accurate as the Dick toxin neutralization test. Neither method gives completely accurate results, but the Dick neutralization test is the more accurate. The Dick neutralization test has so many advantages that it will undoubtedly be generally adopted. It is very important that the antitoxin be measured in units. Recently a number of us defined a unit of antitoxin as the amount that would neutralize 100 skin test doses. I hope the Dicks will approve, as it is founded on their method of testing. At the Willard Parker Hospital, we are using serum given us by Dochez and also that made by ourselves. Most of it is unrefined serum, but part of it was refined by the Banzhaf method developed in our laboratory years ago for diphtheria antitoxin. The only difference between the two is that the rashes are worse with the unrefined serum. In more than a hundred cases, there have been no bad results from using unrefined serum intravenously. The effects following an intramuscular injection are slower in developing than those following an intravenous injection. A very toxic patient, after an intravenous injection, will often appear convalescent in six hours if he had no complications. As to immunization with antitoxin, my feeling is that if the patient has just been in close contact with scarlet fever and one does not mind the development of a rash and the other symptoms of serum sickness, it is wise to give the antitoxin. So far as the pseudoreaction is concerned, I am, however, more in accord with the Dicks than with Zingher. There are, it is true, 3 or 4 per cent. of definite pseudoreactions. A difficulty is that the pseudoreaction is exactly like the real reaction. If the area of injection on the two arms shows the same intensity of reaction, one cannot be certain whether one has a combined or a pseudoreaction. My belief is that, except for scientific work, one does not need to use the heated toxin as a control. The question of exactly what amount of reaction to the Dick dose of toxin suggests susceptibility can be determined by watching the results. Those completely immune to the Dick test appear to be immune to scarlet fever but not necessarily immune to the infections of the scarlet fever streptococci, such as sore throats. The Dick test seems to be as valuable as the Schick test and is a most important contribution to medicine.

Dr. George F. Dick, Chicago: Dr. Zingher has stated that we reported severe reactions following our immunizing doses. He has repeatedly misquoted us in this matter. The reactions to which he refers were purposely obtained in an attempt to show that the toxin alone is capable of producing symptoms of scarlet fever. These persons were later shown to be immunized. But to say that we described these reactions following our immunizing doses is an inaccuracy of which Dr. Zingher must be aware, for we have previously called it to his attention. Concerning pseudoreactions, I do not wish to be understood as denying their existence, but they are not nearly so frequent as Dr. Zingher has reported. If the frequency of pseudoreactions in his tests is not due to an excessive amount of protein, it must be attributed to some fault in his technic. Dr. Zingher stated that Gabritchewsky's vaccine was standardized to contain 0.9 c.c. of toxin in each cubic centimeter. No such statement can be found in the Russian literature. Gabritchewsky's vaccine is a true streptococcus vaccine standardized, not according to toxin content, but according to content of heat killed streptococci. It is a bacterial suspension of such strength that each cubic centimeter yields, on centrifugalization, from 0.02 to 0.03 c.c. of moist bacterial sediment, or 5 mg. of dried streptococci. In articles published during the last two years, we have called attention to the fact that this vaccine probably contained some toxin, which may have accounted for any protection that it conferred. Gabritchewsky's work was valuable, and had it been followed up, it might have led to something more. References to the toxic nature of scarlet fever are frequent in medical literature. As early as 1895, Bergé had concluded that a toxin is concerned. There is nothing to indicate that Gabritchewsky understood the nature of this toxin better than others of his time. Any statement to the effect that he discovered the specific soluble toxin of scarlet fever and consciously employed standardized solutions of this toxin in preventive immunization is not justified by the facts. Zlatogoroff, the most assiduous of Gabritchewsky's pupils, has recently published an article in which he denies the relation of the toxin we described to scarlet fever, and advises Russian physicians to employ Gabritchewsky's vaccine instead of our toxin in preventive immunization.

Relation of Social Service to Records.—The isolation of the social service record from the medical record of the patient is undesirable. The notes entered on the social service record bear largely on factors that influence the patient's well being. Obviously these are essential to the physician in a well rounded study and treatment of his case. From a practical point of view it may not be possible or desirable to combine the records, but an arrangement should be worked out whereby summaries or duplicates of significant entries could be attached to the medical record.—*Hosp. Social Service* **12**:137 (Sept.) 1925.

IS ARTERIOSCLEROSIS A HEREDITARY CONSTITUTIONAL DISEASE?*

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[Editorial Note.—This paper and the three that follow it: by Drs. Allen, Scharf and Lundin; by Dr. Christian, and by Dr. Newburgh, Dr. Marsh, Sarah Clarkson and Dr. Curtis, respectively, constitute a symposium on vascular and renal disease.]

Arteriosclerosis is not a modern disease. Egyptian mummies have been found with sclerotic vessels.[1] Mortality statistics of the last few decades have shown a gradual increase in arteriosclerosis and associated diseases. This fact makes the subject of cardiovascular renal disease a vital one to the practitioner as well as to his patients.

Etiology of arteriosclerosis is abundantly discussed in medical literature, but most authorities agree that our knowledge is still limited and uncertain and hence the subject of this study is put in the form of a question. Infections, acute and chronic, excessive indulgence in protein food, tobacco, alcohol, coffee, and even overwork, have been advanced as causes of arteriosclerosis; but these factors, even to an extreme degree, are by no means always productive of the disease, nor does extreme abstinence save one from this condition.

Because of this fact, I have for many years looked on cardiovascular renal disease as belonging to a certain type of individual having a predisposing tendency to degeneration of arterial tissues. Osler [2] recognized the hereditary factor when he referred to the inheritance of poor arterial tubing unable to stand the wear and tear of the circulation. Because of this, I am offering some observations on a large series of cases studied from the standpoint of heredity and blood chemistry. The study includes 300 patients with arteriosclerosis, 200 healthy women, 200 patients chosen because of blood uric acid being below 3 mg., and 200 with blood uric acid above 4 mg.

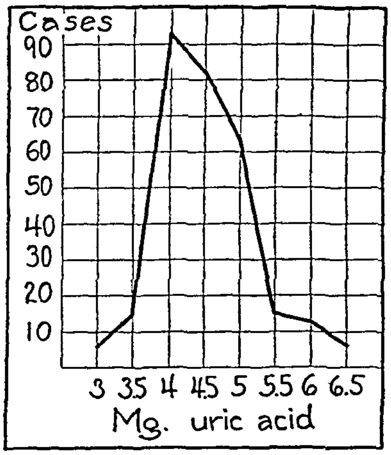
HEREDITY

Most clinical authorities refer to the family or hereditary tendency of the disease. Last year O'Hare [3] presented statistics of a large series of cases and found a positive family history of the diseases in 68 per cent. of the series, with an additional percentage of cases giving history of other circulatory disturbances. Occasionally individual histories show how pronounced the tendency may be in certain families. Mr. B., one of a family of ten children, reported that his father and mother died of apoplexy and of chronic interstitial nephritis, respectively. Nine of the children had already died of apoplexy, and he, the only survivor, had had a stroke and had a blood pressure of 200. In my series of 300 cases of arteriosclerosis, 67.5 per cent. gave a definite history of arteriosclerosis; 8 per cent. a history of other well recognized hereditary diseases, namely, obesity, migraine, gout and bronchial asthma; the remaining 24.5 per cent. were divided between those giving a definite negative history and those having no definite knowledge of causes of death of their ancestors.

In a group of patients having arteriosclerosis with so large a percentage of positive family histories, it does not seem unreasonable to suppose that this heredity carries with it some predisposing dyscrasia or tendency to arterial degeneration, and certainly justifies the conclusion that arteriosclerosis is a hereditary disease.

BLOOD CHEMISTRY

The blood is the most intimate tissue of the blood vessels. It is the carrier of toxins and in this way may have a profoundly irritating effect on the delicate tissues of the arterial tree. In view of these possibilities, the nonprotein nitrogen, uric acid and blood sugar were estimated in all the groups studied. Primarily, the question of renal inefficiency was revealed as a factor in this group. Cases of advanced nephritis were not included. Nonprotein nitrogen and blood sugar were found to be within normal limits, even in the well established cases of arteriosclerosis. But it became very evident that uric acid was rather constantly above normal; and in the 300 cases of arteriosclerosis, only twenty-three, or 7⅔ per cent., had a uric acid of less than 3.5 mg., with 92⅓ per cent. above this figure. The incidence of the increase is shown in the accompanying chart. At first I considered this an evidence of early renal inefficiency. Routine estimation of uric acid in all kinds of cases soon revealed the fact that many people had increased uric acid in the blood without any other suggestion whatever of renal or arterial disease. It was noted that those suffering with obesity, gout, migraine and bronchial asthma almost uniformly had an increased uric acid in the blood. These diseases are usually considered to be of the hereditary type, which led to the question of a constitutional basis for these as well as arteriosclerosis. In view of this supposition, I studied the histories of 200 healthy young college women from a standpoint of blood chemistry, blood pressure and family history. The highest blood pressure recorded was 138 systolic and 110 diastolic, and here all immediate members of the family had high blood pressure. Five of the 200 had pressures of 90 or less; otherwise all came within normal limits. None had nonprotein nitrogen above 33 mg., and only thirty were above 30 mg.



Incidence of cases of arteriosclerosis with increase in blood uric acid.

Before I discuss uric acid in these groups, a word about what may be considered the normal uric acid content of the blood in health is in order. The colorimetric method of Benedict [4] is the basis of these studies, and gives slightly higher readings than former methods. The average of 1,000 estimations, including all cases except frank nephritis, was 3.7 mg. In the group of

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* Read before the Section on Practice of Medicine at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] Albutt, C.: Diseases of Arteries, Including Angina Pectoris **1:** 5.

[2] Osler, William: Principles and Practice of Medicine, 1908, p. 848.

[3] O'Hare, J. P.; Walker, W. G., and Vickers, M. C.: Heredity and Hypertension, J. A. M. A. **83:** 27 (July 5) 1924.

[4] Benedict, S. R.: J. Biol. Chem. **51:** 187 (March) 1922; **54:** 233 (Oct.) 1922.

200 healthy women, the average was 3.1 mg. My impression is that uric acid is a little lower in women than in men; hence I feel justified in saying that for normal persons it should not be more than 3.5 mg., and this does not eliminate those with hereditary tendencies to the diseases mentioned.

In this group of 200 healthy young women, 112, or 56 per cent. of the total, had uric acid below 3.5 mg., and of these only twenty-two, or 11 per cent., gave a positive history of arteriosclerosis, migraine, asthma or gout in the family. There were eighty-eight with uric acid above 3.5 mg., and of these, forty-nine, or 24.5 per cent., gave a positive family history of these diseases. There was almost a parallel increase in the incidence of these diseases in the family with the increase of uric acid. In none of these young women was there evidence of nephritis or arteriosclerosis, unless increased uric acid in the blood may be considered a precursor of some of these maladies.

The second series of 200 cases is based on a uric acid below 3 mg., and among them there were 169, or 84.5 per cent., who gave an *absolutely negative family history* of arteriosclerosis or the other hereditary diseases. Twelve, or 6 per cent., had arteriosclerosis, and nine of these gave a history of the same in their family. Nineteen, or 9.5 per cent. of the total, gave a history of one or more of this group of diseases with no evidence of the same in their own case. Among the group were five with syphilis, none of whom had arterial or other hereditary diseases. Another striking feature is that the average weight was only 132 pounds (60 kg.), and that seventy-five, or 37.5 per cent. of these patients, were diagnosed as having neurasthenia or anxiety neuroses, and belonged to the so-called asthenic type. Among the 200 only three were obese, all of whom were women, and only twenty-five of the entire group weighed more than 150 pounds (68 kg.). These findings suggest that those having low blood uric acid belong to the asthenic type, and that arteriosclerosis and the other hereditary diseases are comparatively rare among them.

The third series consists of 200 cases based on a uric acid of 4 mg. and over. These were taken from other clinical sections so as to avoid duplication. An analysis showed that 80 per cent. had obesity or arteriosclerosis, and only 20 per cent. were negative as to the group of diseases under consideration. The average weight of this series of patients was 176 pounds (80 kg.), as compared with 132 pounds (60 kg.) of those below 3 mg. of uric acid. The family history of this group gave 74 per cent. having arteriosclerosis, obesity, migraine or asthma, 58 per cent. of the total giving a history of arteriosclerosis or obesity. Twenty-six per cent. gave negative histories, which of course includes those that had no positive knowledge of causes of death in their family. In this group with high uric acid only five cases were found showing conclusive evidence of nephritis or renal inefficiency. The study of these 900 cases from the standpoint of heredity and blood chemistry shows conclusively that heredity is a very positive factor in arteriosclerosis and obesity. The number of cases of gout, migraine and bronchial asthma was not great enough to offer a basis for definite opinion, but I think all are agreed that these diseases have a very definite hereditary factor, especially migraine. Cooke[5] notes a definite hereditary tendency in bronchial asthma and calls attention to the fact that, when both sides of the family give a positive history of this disease, it appears earlier in the next generation. This is also true in arteriosclerosis and obesity, according to my observations.

In gout it is considered that uric acid in the blood is a definite factor, but just how it produces the pathologic changes and the classical symptoms is still a disputed question. In even the most manifest cases, a very high uric acid does not seem essential. A patient recently observed (Mr. C. R. C.), with tophi as large as walnuts on various joints, and also a definite arteriosclerosis and a tendency to obesity, had a blood uric acid of only 4.6 mg.

In the series of arteriosclerosis, the greatest incidence of this condition began with a uric acid of 3.6 mg. and reached the maximum between 4 and 4.8 mg., after which the number of cases began to decline. There seems to be a great deal of uncertainty concerning the production and meaning of increased uric acid in the blood. All agree that it is the product of protein metabolism, and some divide it into the endogenous and exogenous uric acid. Mann's[6] work at the Mayo Clinic suggests that the liver plays an important rôle in protein metabolism as related to uric acid. MacLeod[7] also refers to this and calls attention to the influence of the liver on the fat and carbohydrate metabolism. Our findings of a definite parallel between arteriosclerosis and obesity and the blood uric acid suggests that these diseases are fundamentally the result of a faulty protein metabolism, which may be due to a pathologic functioning in the liver cells.

Again, the fact that many women develop a marked hypertension and often a rapidly increasing weight at the menopause suggests that these symptoms are precipitated by some endocrine disturbance, which has been referred to by Engelbach[8] as a dyscrasia of glandular origin. Migraine is also greatly influenced by *menstruation* because *in women it is a very common* experience that the attack of migraine bears a close relation to the menstrual period, and at the menopause it often disappears entirely. During pregnancy such women are also surprisingly free from migraine, all of which is very suggestive of an endocrine disturbance as the fundamental factor in this condition. In the study of migraine, uric acid is found to be definitely increased in a large percentage of cases, which suggests that protein metabolism is perverted in some way. In a series of fifty cases, most of which were in women, we found the average uric acid content of the blood to be 3.7 mg. Miller,[9] in his study on the influence of peptone injections on migraine, calls attention to the possibility of a protein sensitization in this disease. The same applies to bronchial asthma as regards heredity and uric acid findings. These are looked on as cases of a protein sensitization which may be due to a perverted protein metabolism.

In spite of the increased uric acid content in the blood in this group of cases, namely, arteriosclosis, obesity, gout, migraine and bronchial asthma, I do not wish to convey the idea that uric acid is the cause of these conditions. I do believe that in conjunction with the positive hereditary tendencies there must be some perversion of the protein metabolism, perhaps related to a variation in the amino-acids because of a perverted function of the liver cell, or brought about by an endocrine dyscrasia. That uric acid itself cannot be the cause is suggested by the fact that the severity of arteriosclerosis and other hereditary diseases is not dependable on the amount of uric acid in the blood.

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[5] Cooke and Vander Veer: Bronchial Asthma, in Tice's Practice of Medicine.

[6] Mann, F. C.: Some Functions of the Liver, S. Clin. N. Am. **4:** 345 (April) 1924.

[7] MacLeod, J. J. R.: Physiology and Biochemistry, Ed. 4, pp. 563-564.

[8] Engelbach, William: Arterial Hypertension Associated with Endocrine Dyscrasia, J. A. M. A. **74:** 1619-1624 (June 12) 1920.

[9] Miller, J. L., and Raulston, B. O.: Treatment of Migraine with Peptone, J. A. M. A. **81:** 1894 (June 30) 1923.

The incidence of inheritance is suggestive that a dyscrasia affecting protein metabolism is transmitted from one generation to the other. Within the last few months we have had three cases under observation in which a definite history of arteriosclerosis existed in two generations, and the third, still in early life, showed an increased uric acid in the blood. In the two families, the sons had a blood pressure ranging from 140 to 150, their ages being 23 and 26, respectively. In the third family a girl of 9 had a uric acid of 4.3 mg., with no evidence of renal disease and a normal blood pressure.

Another feature in the group of arteriosclerosis is what might be termed a therapeutic test, which is rather universally applied at the present time in cases of this kind as well as in so-called interstitial nephritis. Years of experience have convinced me that a comparatively low protein diet with an abundance of fruit and proper intestinal elimination by dietetic measures is productive of the best results in these patients. I have many patients under observation at present that have followed a low protein *basic* diet over a period of four or more years, who have definitely improved symptomatically on this regimen with no increase in blood pressure or other evidences of progress of the disease. Sansum and Blatherwick have called attention to the value of the basic diet in cardiovascular renal disease, and emphasize the study of the hydrogen ion reaction in the urine as evidence of increase in the alkalinity of the blood. Excessive protein, regardless of the type, increases the acidity of the blood and urine and will also increase the uric acid in the blood. This evidence of benefit derived from a basic diet seems to point to the protein metabolism as a disturbing factor in arteriosclerosis. My experience convinces me that severe cases of arteriosclerosis can at least be kept in abeyance on such a regimen. In conjunction with this dietetic regimen it is essential that the usual aggravating factors, such as chronic foci of infections, excessive use of alcohol and tobacco, coffee and salt, be eradicated as far as possible. These are features that apply to all patients. It is just as important to remove an abscessed tooth in the patient with tuberculosis as in the one with arteriosclerosis. In view of the hereditary factor in arteriosclerosis and the evidence that we have a perverted protein metabolism associated with it, is it not justifiable to consider this as a constitutional factor in the disease? In view of these findings, I think that a thorough understanding of a basic diet is very essential, not only as a curative factor, if such is possible, but also as a prophylactic measure, especially in families in which arteriosclerosis or other hereditary diseases exist, and which evidence a perverted protein metabolism. Sansum and Blatherwick[10] have called attention to the value of this basic diet in nephritis, and in my opinion it is of just as great value in arteriosclerosis. I believe that the excessive indulgence in or abuse of the protein element in nutrition is productive of more general harm than overindulgences in the other nutritive elements. Families in which arteriosclerosis and the other diseases exist require our advice as to dietetic regimen early, as a prophylactic measure, and in this way we hope to postpone the appearance of arteriosclerosis. The strikingly large number of cases of arterial hypertension that appear before 50 years of age are the ones that should be greatly benefited by the early institution of the proper dietetic regimen. For years I have been impressed with the fact that nearly every case of early arteriosclerosis shows a family history of this disease or obesity and frequently migraine on both sides of the family, and that these patients belong uniformly to the robust type of individual. Early dietetic management may do much in such cases, because it is well known that these persons are unduly fond of food and especially protein, and uniformly addicted to overindulgence.

CONCLUSION

I believe that arteriosclerosis or cardiovascular renal disease is definitely hereditary, amply proved by careful study of family histories. Also by way of heredity an abnormal protein metabolism is transmitted, which is manifested by an increased uric acid content in the blood, and which no doubt occurs long before any evidence of hypertension or renal disease can be detected. This increased uric acid in the blood suggests an inherited inability properly to metabolize protein, which may be endocrine in origin, or due to abnormal function of liver cells.

Our best and most rational prophylactic measure as well as remedy is a basic diet, which necessitates a reasonably low protein intake.

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[10] Sansum, W. D.; Blatherwick, N. R., and Smith, Florence H.: The Use of Basic Diets in Treatment of Nephritis, J. A. M. A. 81: 883 (Sept. 15) 1923.

CLINICAL AND EXPERIMENTAL RENAL DEFICIENCY *

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AND
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When any clinical disease can be satisfactorily reproduced in experimental animals, the basis is laid for its better understanding and control. For this reason the effort has been made on a comprehensive plan in this institute to produce a condition that has heretofore been lacking; namely, the reproduction of clinical kidney diseases. This investigation is still in progress. The preferred course would be to wait some years longer until the evidence is completely gathered, and then to present the results in finished form. The problem of finance is the real reason why such investigations cannot be carried out ideally. It is possible only to add to the series of previous brief reports, summarizing our tentative findings and conclusions to date.

As experimental animals, dogs, sheep and goats have been used, each species presenting some special peculiarity or advantage, and all being large enough to permit the necessary physiologic and chemical observations. Some of the experiments are acute. Others, designed to imitate chronic nephritis, necessarily extend over years, and these are the chief cause of delay and difficulty. The general plan of the work has been to injure or reduce organs and then place functional strain on them, under conditions imitating those of clinical cases as closely as possible.

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* From the Physiatric Institute.

* Read before the Section on Practice of Medicine at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

ACUTE CONDITIONS

Total nephrectomy produces a condition which in dogs is actually fatal, generally within a couple of days. Nitrogen retention and acidosis are demonstrable, but death occurs from weakness without edema, hypertension, or any of the typical clinical phenomena of nephritis. Total nephrectomy thus gives as poor an imitation of clinical nephritis as total pancreatectomy gives of diabetes. One advantage is gained by changing to goats, for these animals may survive total nephrectomy for a couple of weeks. The mystery of the difference between total nephrectomy in animals and total suppression of urine in man is thus reduced to a mere difference of species. The survival of the nephrectomized goat is about equal to that of a human patient with total anuria, and the symptoms are essentially similar.

After total nephrectomy, dogs refuse food and are subject to vomiting and diarrhea, but intravenous injections still offer a means of modifying the symptoms. Urea injections afford a fairly good imitation of clinical uremia. Sodium chlorid injections are able to produce convulsions suggestive of the eclamptic form of uremia, but no satisfactory edema is produced. Nephrectomized sheep and goats, on the other hand, eat and digest well, and thus can be fed either protein or salt. They are subject not only to nitrogen retention but also to large dropsical effusions. The absence of any gross pitting edema of the face or limbs may be a matter of species, or may be due to an absence of the peripheral vascular injuries which are assumed to be present in human cases. The production of the experimental anasarca seems the most important point.

The effects of functional burden on the kidney can be tested in uranium-poisoned animals. The lethal dose in our experiments has been about 4 mg. per kilogram of weight. Dogs ordinarily bear 2 mg. per kilogram without dangerous symptoms. But when a dog receiving 2 mg. of uranium nitrate per kilogram is fed heavily with protein or given large quantities of sodium chlorid, death occurs within a few days, just as if two or three times as much uranium had been given. The pathologic alterations in the kidneys are correspondingly increased. Plain water or sodium bicarbonate does not have this effect. The supposition that only the sodium ion in sodium chlorid is harmful in renal disease is thus disproved. These experiments carry a practical lesson; namely, that in acute nephritis the intake of both protein and salt should be rigidly restricted, with a view not merely to ameliorating the immediate symptoms but also to diminishing renal damage.

CHRONIC CONDITIONS

We have had poor success from attempts to produce conditions of chronic nephritis by several months' administration of small doses of mercury, uranium or lead, with or without protein or salt overfeeding. Such methods are uncertain, because it is too difficult to steer a prolonged course between trivial injuries on the one side and acutely fatal damage on the other.

As partial pancreatectomy is the best means of producing chronic experimental diabetes, so also partial nephrectomy seems to offer the best reproduction of chronic nephritis. There is an interesting variation in the quantity of kidney tissue needed by different species. Dogs die if the remaining kidney tissue amounts to much less than half of one kidney. We have not yet learned how small a kidney remnant may suffice for a goat, but it is certain that this species can live in seemingly good health with only one fifth of one kidney. Earlier investigators discarded partial nephrectomy as a means of imitating clinical nephritis, because the results were supposed to be negative. This idea is correct under ordinary conditions, and neither albuminuria, clinical symptoms nor downward progress occur spontaneously. The results become different when we introduce a factor that was overlooked by most investigators; namely, functional overstrain.

SYMPTOMS OBTAINED

With a suitable degree of partial nephrectomy, overfeeding with either protein or salt proves fatal in any species after a period of weeks or months, and by a suitable management of the experiments the following symptoms of kidney disease are obtained during this time:

1. *Azotemia.*—By protein feeding, the urea and other nonprotein nitrogenous substances can be raised to practically any desired level in the blood. In one dog we thus obtained figures of 670 mg. urea and 40 mg. of creatinin + creatin per hundred cubic centimeters of blood, while the total nonprotein nitrogen was 360 mg. Typical uremic deaths occur under these conditions.

2. *Acidosis.*—The inorganic phosphorus in the blood of such animals may reach levels of 20 mg. or more per hundred cubic centimeters, while the plasma bicarbonate may fall to levels of 20 per cent. by volume or lower.

3. *Edema.*—Partially nephrectomized dogs are not subject to edema even with the heaviest salt feeding, unless there is a slight local inflammation to act as a contributing factor. Partially nephrectomized sheep can develop a retention of as much as 4 or 5 kg. of water, which can be made to appear or disappear or persist by suitable control of the salt intake. In a pregnant sheep, the fluid retention with high salt feeding amounted to 13 kg. This retention does not take the form of a pitting edema. But, in addition to effusions in the serous cavities, a marked water storage in the subcutaneous tissue is revealed by incision; apparently only the structure of the tissues prevents pitting. There is evidently also a large storage of water in organs or tissues where it is not grossly visible. On the other hand, in a goat possessing only one fifth of one kidney, salt feeding resulted in polyuria and removal of water which had previously been stored in the tissues. These differences and also the peculiarities of salt retention cannot be discussed here in detail. We seem to have indications of both wet and dry salt retention—retention of quantities of salt greatly out of proportion to the retained water, and retention of water out of proportion to the salt.

4. *Hypertension.*—This study has been facilitated by the use of an auscultatory method, which is as simple and apparently as satisfactory for taking blood pressures in dogs as in human beings.[1] Though dogs remain immune to edema even with severe spontaneous nephritis, we have demonstrated the existence of a persistent hypertension of 200 mm. or more in conjunction with spontaneous nephritis in a dog. Partial nephrectomy does not yield any equal results, even with heavy or prolonged overfeeding with protein or salt. Elevations of 20 or 30 mm., namely, to a systolic level of from 180 to 190 mm., have been the best obtained thus far.

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[1] Allen, F. M.: Auscultatory Estimation of the Blood Pressure of Dogs, J. Metabol. Res. 4: 431-443 (Sept.-Oct.) 1923.

They are somewhat variable, and nephritis tends to predominate over hypertension. These observations seem to favor the view that hypertension is not a result of kidney disease alone, but results from a more generalized circulatory disorder. In our clinical work also we have been inclined to regard hypertension as a distinct entity, which may occur pure or mixed with nephritis, the hypertension being perhaps the same condition in the two instances, though the hypertension and nephritis may possibly interact and aggravate each other.

5. *Hyposthenuria.*—The power of the kidney to concentrate and dilute is generally regarded as its most essential function, and the impairment of this power as the most decisive evidence of nephritis. Partially nephrectomized dogs have an easily demonstrable impairment of water excretion, large volumes of administered water being retained in the blood or tissues while the urine remains relatively scanty and its specific gravity relatively high. This deficiency of water excretion is most marked when the removal of kidney tissue is most extensive, and is increased by any diet or other measures that damage the kidney remnant. Partially nephrectomized sheep and goats, on the other hand, are readily capable of polyuria and can dispose of enormous quantities of water and salt, even though considerable retention may occur in the blood or tissues. Thus, the goat already mentioned, possessing only one fifth of one kidney, was able to excrete as much as 7 liters of water and 70 gm. of sodium chlorid a day. After more prolonged overfeeding with salt, however, partially nephrectomized goats and sheep show a distinct reduction of the concentrating power, for example, from a maximum of 2.1 per cent. to 1.2 per cent. sodium chlorid, this impairment of function being then permanent. We have not been able to obtain such impairment by the heaviest overfeeding in normal animals.

6. *Blood Volume Changes.*—It is well known that the blood volume is very efficiently regulated in normal animals, so that it is little changed by any kind of dosage by mouth and only slightly or briefly even by intravenous injections. Certain abnormal conditions impair this regulation. In a normal pregnant sheep, the mere feeding of salt and water increased the blood volume 20 per cent. Partially nephrectomized dogs and sheep are still more subject to increase of plasma volume, up to 32 per cent., with salt and water feeding. On the other hand, a diminution of plasma volume by as much as 10 per cent. is obtainable with some conditions of diet, especially in goats. The Griesbach congo red method affords an easy means of following these fluctuations and thereby proving that clinical conditions of this character are duplicated in experimental animals.

7. *Anemia.*—In addition to hydremia, partially nephrectomized animals are subject to the development of anemia like nephritic patients. The diet is again the responsible cause, but details must be left for future publication.

8. *Urine Changes.*—Overfeeding of partially nephrectomized animals with either protein or salt gives rise to the excretion of albumin and red blood corpuscles in the urine. This albuminuria in dogs usually remains slight, perhaps one or two parts per thousand by Esbach's method; but in sheep it becomes much heavier. Heavy salt feeding also gradually gives rise to numerous casts; protein feeding seems to be much less effective in this regard. If the overfeeding is stopped after a few weeks, the albumin, red cells and casts may diminish but usually do not disappear. In other words, a permanent renal lesion is produced, as judged by the urine.

9. *Renal Pathologic Conditions.*—Simple partial nephrectomy without functional overstrain is not followed by any histologic changes resembling a nephritis in the kidney remnant. Normal animals are not subject to nephritic lesions from overfeeding with either protein or salt. It is to be understood that in all such experiments the diet was kept as nearly normal as possible for the species; the dogs received their protein in the form of meat, and the sheep or goats in the form of grain, sometimes with soy bean meal. The sheep and goats would not eat soy beans or any high protein diet for any long time. The observations of the histologic effects of protein in partially nephrectomized animals are still incomplete. Prolonged high salt feeding produced slight changes in the glomeruli and more marked changes in the tubules. There was hypertrophy of the glomeruli, with marked increase of nuclei. Lymphocytes and polymorphonuclear leukocytes were seen about the proximal convoluted tubules. These tubules in various places were without nuclei, and their lumina were often filled with necrotic masses showing occasional nuclei and also numerous red cells. Casts and red cells were also found in the Henle loops and distal convoluted tubules. The renal impairment from functional overstrain, indicated by the clinical symptoms, is thus confirmed by the pathologic studies. These studies have been chiefly carried out by Dr. J. Loesch, and are still in progress.

CLINICAL CONSIDERATIONS

The reproduction of a number of the chief features of nephritis by the functional overstrain of a small kidney remnant in experimental animals seems to be in accord with at least two sets of clinical facts.

First, retinitis occurs definitely from chemical causes in diabetic and nephritic cases, and if these cases are brought under control by diet the retinitis is definitely arrested. In other words, the process of edema, infiltration and hemorrhage is, in this instance, at least, subject to functional influences. If the retinal vessels may be considered as representative of the small vessels in the kidneys and elsewhere, similar conditions may be assumed to hold for the latter vessels.

Second, clinical experience does not justify the widespread belief that either nephritis or hypertension is a disorder running a spontaneous, inevitable course. We know after six years of careful study that the great majority of hypertension cases can be brought and kept under control by a sufficiently strict salt-free diet. The progressiveness is halted, and the arteriosclerosis, which in these cases seems to be largely secondary to the hypertension, appears likewise to be prevented. The same rule seems to hold for any form of chronic kidney disease. If the case is so severe that the symptoms cannot be controlled by treatment, the progressive tendency continues. If the symptoms can be controlled and the blood chemistry kept anywhere near normal, the progressive tendency is generally abolished. The only exception to these rules arises from infection, which is both a primary cause and a cause of downward progress in most forms of metabolic disease.

COMMENT

Both the experimental and clinical studies seem to place diabetes and kidney disease on much the same basis. The pathology of both is composed of a primary and a secondary factor. The primary factor is infection or intoxication, producing the initial lesions. The secondary factor consists in a functional overstrain of the damaged organ. The hydropic degeneration of the islands of Langerhans is explainable on this ground and no other. Likewise the degenerative changes in the renal epithelium, which have been mysterious in cause and character, can probably in large measure receive the same functional explanation. Vascular disease or other local peculiarities may make the conditions less clear-cut in the kidneys than in the pancreatic islands. One difference must be recognized in the fact that functional rest of the pancreatic islands clears up glycosuria, while functional rest of the kidneys does not usually clear up albumin and casts. On the other hand, it is also known that albumin and casts are not trustworthy signs of the progressiveness of a case. With allowance for certain inevitable consequences of existing organic and vascular damage, the recognition of the class of secondary anatomic lesions due to functional overstrain should represent a valuable advance in the study of diseases of the kidneys. The clinical application is also important; namely, that for the most part hypertension and nephritis are not inherently progressive but are permanently controllable by adequate sparing of function.

CLASSIFICATION OF CHRONIC NEPHRITIS *

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Classifications of nephritis, whether suggested by clinicians or by pathologists, usually are very complex. It has seemed to me that these classifications, by reason of their complexity, are of less service in the clinic, because it is so difficult to fit the patients into them, and because so often there is a failure of agreement between the predicted and the actual anatomic changes in the kidney.

My own experience has been that, even with the application of both the old and the new methods available for diagnosis, it is not possible to diagnose accurately, during life, the anatomic changes that will be found in the kidneys after death. This is not to say that, from certain groupings of symptoms and clinical findings, one may never prophesy correctly what the pathologist will find at necropsy; but the errors are sufficiently frequent to justify much skepticism of one's ability to correlate clinical findings with postmortem lesions. These failures minimize the usefulness of such classifications as are on an anatomic basis, and the majority of them are of this type. Furthermore, it seems to me that complicated classifications create a false idea of our knowledge of nephritis, particularly for those who do not obtain necropsies in their fatal cases and therefore cannot check the lesions found in the kidney with the opinion formed before the patient's death as to his proper place in the classification.

GROUPING OF PATIENTS

I believe a simple clinical grouping of patients with nephritis, for the present at least, is more useful to the clinician than any other. For this reason, I have utilized such a very simple clinical grouping of my patients with nephritis as the following:

Acute nephritis.
Subacute nephritis.
  1. Subacute nephritis with edema.
  2. Hemorrhagic nephritis.
Chronic nephritis.
  1. Chronic nephritis with edema.
  2. Chronic nephritis without edema.
  3. Vascular hypertension progressing into nephritis.

In Group 1 of chronic nephritis, hypertension is rare until the late stages, while in Group 2 it is present throughout with very few exceptions. Obviously, there is relatively little difference between Groups 2 and 3 of chronic nephritis, though to separate them when possible seems advantageous.

Chronic nephritis with edema, meaning by edema that of renal origin and not edema secondary to cardiac failure, is actually a rare condition. It is to be recalled that many nephritic patients have cardiac insufficiency, in addition, and this results in cardiac edema. Failure to keep this in mind often leads to error in classification. Even if one includes with chronic nephritis with edema those patients with renal edema whose duration of life is so short as to justify the diagnosis of subacute rather than chronic nephritis, they still are very infrequent in occurrence. In my own clinic, we have studied approximately 1,650 cases of chronic nephritis, of which fifty-four have been placed in the subacute group, and only about five in the group of chronic nephritis with edema. It is to be recognized that some patients, beginning with edema, may pass on to a stage of chronic nephritis without edema, and might be classed in Group 2, because of failure to get this from the history. Making every allowance for these possibilities of error, it is very evident that chronic nephritis with edema is actually a rare disease, and that the bulk of patients with chronic nephritis come in Groups 2 and 3.

Another thing of much interest in this connection is that very few patients with chronic nephritis placed in Groups 2 and 3 give any history suggestive of an onset with acute nephritis. Patients with renal edema, whether grouped as subacute or chronic, usually begin with acute symptoms like those of the usual acute nephritis, but instead of clearing up, the condition steadily progresses, for most cases to death, in less than two years, but in a very few it continues for a much longer time with later decrease of edema, until they become, in these later stages, indistinguishable from patients in Group 2; i. e., chronic nephritis with edema. The vast majority of patients with acute nephritis recover, and only a few die in the acute stages. So far as I can judge, patients who have had acute nephritis are not more liable to chronic nephritis without edema than are normal persons who have never had acute nephritis. This is a further reason for separating into different groups those patients who show so definite a difference in their clinical picture.

Now if one studies patients in Groups 2 and 3 of chronic nephritis, and follows the progression of symptoms and physical findings, checking the progression of the disease with repeated examinations of the urine and tests of renal function, it soon becomes obvious that these patients do not suffer merely by reason of a kidney [illegible] ces involv-

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* Read before the Section on Practice of Medicine at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

ing the general vascular system are present. They are not patients with chronic nephritis, but a group of patients with general vascular disease in whom the renal disease is but a local manifestation, which may or may not dominate the clinical picture. The simple clinical grouping suggested above quite definitely separates patients considered as having chronic nephritis into two groups; one, a large group whose renal disturbance is but a part of a symptom complex of vascular disease, and another, a very small group, which is definitely different, possibly actually a nephritis in the sense of a disease localized almost entirely to the kidney. It is very significant that so large a proportion of patients, diagnosed as having chronic nephritis without edema, should so regularly show marked evidence that they are suffering from extensive vascular disease. In other words, a very large proportion of our patients, diagnosed as having chronic nephritis, are really patients with extensive vascular disease rather than chronic nephritis in the sense of a local renal disease.

Patients with chronic nephritis diagnosed as belonging in Groups 2 and 3 show numerous evidences of diffusely spread vascular disease. In the first place, a very large percentage of them have high blood pressure, which, so far as we know, is evidence of a widespread disturbance in the peripheral small arteries, with either spasmodic or organic reduction of their bore. Further evidence of small vessel lesions lies in the changes so frequently seen in the eyegrounds, such as sclerotic changes in the arteries, hemorrhage, gray and white spots, or edema; changes often, though probably quite incorrectly, spoken of as albuminuric retinitis. Sooner or later, these appear in almost all the patients of these groups.

Very frequently the large arteries, such as the radials, brachials and temporals, show thickening and tortuosity. The aorta becomes dilated, as shown by percussion or roentgen ray. Heart hypertrophy is very common, and cardiac failure often causes disturbing features of the clinical complex. Angina pectoris may point to coronary disease. Various cerebral disturbances, including hemorrhage, may occur as evidence of lesions involving the cerebral vascular territory. Nosebleeds and hemoptysis, when they occur, point to vascular lesions in these territories.

A goodly number of these patients show moderate glycosuria, often only irregularly, and have hyperglycemia. Some regard this as evidence of vascular lesions affecting the islands of Langerhans in the pancreas. Possibly some of the gastro-intestinal symptoms result from lesions in their arterial supply. In an occasional case, this seems to be definitely true.

All in all, there is striking clinical evidence of vascular lesions widespread in distribution, while pathologically, in the kidneys themselves, as well as in other organs of the body, microscopic study shows vascular lesions often extremely marked and widespread in distribution. Keeping in mind these various vascular lesions, one can readily understand a wide variation in symptoms and physical findings, depending on the extent and distribution of vascular lesions.

It has seemed to me that if more attention in our studies were focused on general vascular changes in this very frequent variety of chronic nephritis, rather than on renal function alone, we might obtain a better conception of the disease.

The ophthalmoscope has been of extreme value in the study of these vascular lesions. In its present forms, it is easy to use and gives so much information of value in a variety of diseased conditions, that it seems to me a well nigh indispensable instrument for the man practicing any type of internal medicine. It should become a pocket companion of the stethoscope for all internists.

The roentgen ray has added greatly to our knowledge of disease of the larger vessels. Dilatation, tortuosity and calcified plaques in the chest film, supplemented by fluoroscopy, present us with very definite ideas of type and degree of vascular lesion in the aorta. The roentgen ray will reveal calcification in large, medium sized and even small peripheral arteries and add information about blood vessels, at times of much service. Today, stereoscopic roentgenograms frequently can show us the tortuosity, dilatation or calcification of the circle of Willis as evidence of cerebral vascular disease. Use of the roentgen ray in the study of patients with chronic nephritis can but impress one with the importance of vascular lesion in the patients of this group.

If one is to manage satisfactorily the patient with the progressing symptoms of chronic nephritis without edema, close attention often must be focused on the heart. Progressing enlargement, appearance of arrhythmias, signs of cardiac insufficiency, such as edema, râles at the lung base and an increasing amount of albumin in the urine, and the development of the diastolic murmur of slight to moderate aortic insufficiency are the signs of a growing cardiac failure which will form an important element in determining the patient's prognosis.

Very much of value still can be learned of these patients from simple urine examination, especially from the microscopic study of urine sediment as to cells and casts. This somewhat old fashioned method still remains a most valuable part of the examination of a nephritic patient, especially if the physician himself looks at the sediment rather than getting his information from a technician, however careful and well trained.

Earlier in these remarks, I referred to tests of renal function. I would emphasize that these may be very simple. The phenolsulphonephthalein test may be done by any physician on office or house patients. A determination of blood urea is helpful if attainable. Other determinations of blood chemistry add too little of value to be much worth while, and now for some time in our clinic we have discarded them.

I have made reference to roentgen-ray examinations in chronic nephritis. These, however, need not be applied in the study of the individual case. Rather are they useful in emphasizing the extent of vascular changes, which, after all, are recognizable by the simple armamentarium of the practicing physician, once their frequency and significance are appreciated.

It is to be emphasized that the careful repeated application of such simple methods as history taking, physical examination, including the use of simple bedside apparatus, as the stethoscope, ophthalmoscope, blood pressure machine and blood counter, along with very simple methods of urine examination and simple tests of renal function, give us the needed information for the understanding and management of patients with chronic nephritis. Methods out of reach of the well trained general practitioner add not a great deal of useful information and certainly should not supplant any of these simpler, long used methods.

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THE DIETETIC FACTOR IN THE ETIOLOGY OF CHRONIC NEPHRITIS [*]

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During the last hundred years, continuous efforts have been made, in laboratory and in clinic, to find the cause or causes of chronic nephritis. The problem is still far from satisfactory solution. It is true that a number of substances experimentally employed, notably several heavy metals, have been shown to produce chronic sclerosing disease of the kidney. But chronic heavy metal poisoning occurs too infrequently to be etiologically important in human chronic nephritis.

It is obvious that causes must be sought, exposure to which are exceedingly common in those parts of the world in which chronic nephritis is prevalent. From time to time clinicians have suspected overeating as a factor in the etiology of chronic nephritis, and, since protein is the only one of the three foodstuffs whose end-products are excreted by the kidney, suspicion rests specifically on the nitrogenous foods. No systematic study of the relation of diet to nephritis was undertaken until 1916, when one of us began to feed high protein diets to experimental animals. The problem has been studied in our laboratory continuously since that date, and it is our purpose in this communication to report in summary the results thus far obtained.

TABLE 1.—*Effect of High Protein Diet on Rabbits' Kidneys (Egg)*

No.	Daily Protein	Months	Urine	Histology
6	2-3 egg whites	0.5-1.5	Albumin; casts	Cloudy swelling; congestion; casts
4	Egg white ad lib. alternate stock diet	3-7	Albumin; casts	Cloudy swelling; hemorrhage; casts
4	3 egg whites, 230 calories	4-10	Albumin; casts	Same

As a preliminary experiment,[1] a relatively small series of normal rabbits was fed a diet containing a high proportion of coagulated egg white. Within a few weeks, all such animals were voiding a urine containing albumin and casts. Table 1 summarizes these experiments.

In order to demonstrate that the production of these abnormalities was not a specific property of egg albumin, a second protein, casein, was fed in a similar manner.[1] The casein was mixed with milk, grated carrot and sodium bicarbonate, so that the diet was abnormal only in its excess of protein and the added alkali, which maintained an alkaline condition of the urine. As will be seen in Table 2, abnormalities were found similar to those produced by egg white.

Since the ingestion of animal protein by an herbivorous animal might produce injury that would not follow the ingestion of a vegetable protein, another series of rabbits was kept for several months on a diet consisting of soy beans and water.[1] Soy beans contain about 38 per cent. of protein. These rabbits excreted about twice as much nitrogen in the urine as normal control animals. The urine was alkaline. It will be seen from Table 3 that a slowly developing injury occurred from this diet.

Our next effort was to repeat this type of experiment on a larger scale and in a more systematic manner.[2] Dry powdered lean beef was selected for the protein because it was known to be "complete" from the amino-acid standpoint. This was mixed in definite proportion with white flour, bran, baking powder and water, and the resulting glutinous mass was baked. Diets containing 37 per cent. of protein and 27 per cent. of protein, respectively, were thus obtained. This diet was supplemented with green leaves twice weekly.

TABLE 2.—*Effect of High Protein Diet on Rabbits' Kidneys (Casein)*

No.	Daily Protein	Months	Urine	Histology
4	30 gm. casein	7-11	Albumin; casts	Cloudy swelling; hemorrhage; casts
2	15 gm. casein	12	Normal	Normal

It will be seen from Table 4 that the rabbits which received the diet containing 37 per cent. of protein developed renal changes of a chronic type in from five to seven months. Rabbits receiving 27 per cent. of protein for the same time showed evidence of a renal injury of an acute type; only when the feeding was continued much longer was the diet capable of producing the chronic change that occurred much earlier with the higher diet. A large number of control animals showed no such lesions. One may conclude from these experiments not only that an excess of beef protein is capable of injuring the kidney of the rabbit, but also that the degree of the injury is dependent on two factors: the amount of protein ingested and the duration of the excessive protein ingestion.

There is an obvious objection to the use of the herbivorous rabbit in this type of experiment in that the results cannot be applied without qualification to omnivorous man. Furthermore, since the normal dietetic requirement of rabbits has not been worked out, it is possible that our diets may have been abnormal in some other regard than this protein content. For these reasons we are now studying the effect of diets containing varying amounts of protein on the kidneys of white rats. The experiments [3] are conducted according to the plan described and successfully used for many years by Osborne and Mendel. The diets contain all the factors that are necessary for growth and maintenance. In addition to using casein as the principal source of protein, as is the custom of Osborne and Mendel, we have employed dried powdered beef in the diets of about half the animals.

TABLE 3.—*Effect of High Protein Diet on Rabbits' Kidneys (Soy Bean)*

No.	Daily Protein	Months	Urine	Histology
5	Bean ad lib. (38% protein)	4	....	Normal
15	Same	5-10	Albumin; casts	Cloudy swelling, atrophy and dilatation of tubules; casts
6	Stock	7	Normal	Normal

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[*] Read before the Section on Practice of Medicine at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] Newburgh, L. H.: Production of Bright's Disease by Feeding High Protein Diets, Arch. Int. Med. **24**: 359 (Oct.) 1919.

[2] Newburgh, L. H.: Renal Injury Produced in Rabbits by Diets Containing Meat, Arch. Int. Med. **32**: 850 (Dec.) 1923.

[3] To be published.

Tables 5 and 6 show in very brief form the effects of these diets on the urines of rats during the first year of the experiment. In the first place, diets containing excesses of protein produce urinary abnormalities in the omnivorous rat. In the second place, the rate at which evident abnormalities develop is dependent on the amount of protein fed and the length of time the diets are used. These results justify the statement that protein above certain limits is injurious to the kidneys of omnivorous as well as herbivorous animals.

Table 4.—*Effect of High Protein Diet on Rabbits' Kidneys (Powdered Beef)*

No.	Per Cent. Protein	Months	Urine	Histology
8	37	5-7	Albumin; casts	Cloudy swelling; atrophy and dilatation of tubules; casts
33	27	To 6	Albumin; casts	Acute parenchymatous injury; casts
12	27	6-14	Albumin; casts	Cloudy swelling; atrophy and dilatation of tubules; casts

Table 5.—*Effect of Diets of Various Protein Contents on the Kidneys of White Rats**

	Time Period									
	2 Months		4 Months		6 Months		10 Months		12 Months	
Protein, per Cent.	No.	Casts	No.	Casts	No.	Casts	No.	Casts	No.	Casts
8	5	0	5	0	5	0	..	..	..	..
12	10	0	10	0	10	0	..	..	..	..
16	5	0	..	..	4	0	..	..	..	..
18	10	0	18	1	14	0	9	0	7	0
25	..	..	20	5	24	16	13	9	12	10
32	..	..	17	10	24	19	18	12	15	14
39	6	1	26	15	24	22	17	17	13	13

* Number of animals and number showing casts in urine.

What element in the high protein diet is the one that is injurious to the kidney? We investigated a number of possibilities, including sensitization to the protein; absorption and elimination through the kidney of the ingested protein, as such; excessive urinary acidity; absorption and elimination by the kidney of toxic products of bacterial decomposition of the protein in the intestine; excessive excretion of urea, and accidental infections. In no case could we find evidence that any of these factors is responsible for the renal injury. Since protein is absorbed from the intestine as its amino-acids, it was thought possible that further information could be obtained by their injection into normal animals.

We have injected intravenously into normal rabbits and puppies twelve of the amino-acids that result from the digestion of protein.[3] Of these, no evidence of injury was obtained from glycin, alanin, phenylalanin, glutamic acid, leucin and arginin. Of the remaining six, aspartic acid was injurious to the kidneys of rabbits but not to those of dogs, whereas lysin, histidin, cystin, tyrosin and tryptophan gave unequivocal evidence of renal damage as the result of their injection into the circulation of both rabbits and dogs. In the cases of the last three, in particular, not only were marked urinary abnormalities obtained, but also the microscopic examination of the kidneys showed extreme parenchymatous injury.

It is thus demonstrated that these normal digestion products of protein are capable of injuring the kidney. Urinary abnormalities following the oral administration of certain amino-acids have been noted both by us and by others.[4] These facts corroborate our previous evidence that renal injury may be caused by simple protein excess. The experiments also bring us closer to an understanding of the ultimate relation between diet and the etiology of chronic nephritis. It should be pointed out in this connection that Folin, Berglund and Derick [5] have found in uric acid another normal nitrogenous metabolite that injures the kidney.

How may these experiments be interpreted in relation to the etiology of human chronic nephritis? Three answers are possible: (1) that protein is the sole cause; (2) that protein has no etiologic significance, and (3) that protein is one of several etiologic factors. That protein is not the sole cause of chronic nephritis is shown, among other things, by the fact that we have not in our experiments produced a lesion identical with that of human nephritis. Those who maintain that protein has no place in the etiology of chronic nephritis are supported by the fact that the data were obtained from animals. In answer, it should be pointed out that the injury was produced in rabbits, rats and dogs; it is difficult to conceive that a substance would damage the kidneys of herbivora, omnivora and carnivora without damaging the kidney of man. Furthermore, there is a considerable body of evidence tending to show that excess of protein may damage the kidneys of man; this question has been discussed by one of us.[6] It is our present belief that the third answer is the correct one, that excess of protein is a contributory factor in the etiology of chronic nephritis. For example, focal infection alone might not seriously damage the kidney. Excess of protein alone might not seriously damage the kidney. Focal infection and excessive ingestion of protein in the same subject are a combination of circumstances that commonly results in chronic nephritis.

It may at first be difficult to believe that an essential foodstuff is capable of damaging the kidney, but the following experiment shows how protein may be good or bad, depending on whether it is fed in large or small amounts. Osborne and Mendel [7] have shown that diets with no protein save 8 per cent. of casein will not grow normally. When they added 0.24 per cent. of cystin to this diet, good growth was obtained. With this in mind we are feeding five groups of rats the basic 8 per cent. casein diet with different amounts of cystin for

Table 6.—*Percentage of Rats Showing Casts on Diets of Varying Protein Content*

Protein, per Cent.	2 Months	4 Months	6 Months	10 Months	12 Months
8............	0	0	0	..	..
12............	0	0	0	..	..
16............	0	0	0	..	..
18............	0	6	0	0	0
25............	..	25	66	69	83
32............	..	58	79	67	93
39............	17	58	92	100	100

Table 7.—*Effect on Rats' Kidneys of Varying Amounts of Cystin Added to Diets Containing No Protein Except 8 Per Cent. Casein*

		Per Cent. Showing Casts			
Added Cystin, per Cent.	Number Rats	30-90 Days	90-150 Days	150-210 Days	Average Weight Gain in 200 Days
None................	5	0	0	0	76
0.25................	4	0	0	0	135
0.75................	4	0	25	100	142
1.00................	4	0	100	100	144
1.25................	4	0	50	75	127*

* All females.

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[4] Lewis, H. B.: Effect of Repeated Administration of Small Amounts of Cystine on the Rabbit, J. Biol. Chem. **63**: 20 (Feb.) 1925.

[5] Folin, O.; Berglund H., and Derick, C.: Uric Acid Problems, J. Biol. Chem. **60**: 361 (June) 1924.

[6] Newburgh, L. H.: Etiology of Nephritis, Med. **2**: 77 (Feb.) 1923.

[7] Osborne, T. B., and Mendel, L. B.: The Comparative Nutritive Value of Certain Proteins in Growth, J. Biol. Chem **20**: 379 (March) 1915.

each group, varying from none to 1.25 per cent. added cystin. Inspection of Table 7 will show that the addition of 0.25 per cent. of cystin will produce as good growth as any of the larger additions. Hence, the smallest addition of cystin is enough. It will further be seen that the larger additions are harmful to the kidney, as evidenced by the cylindruria. Thus, while a small amount of added cystin is requisite to growth in this diet, several times the requirement not only adds no further benefit but is actually harmful. While a certain amount of protein is essential to life, it is our belief that amounts much beyond the requirement are nephropathic.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MORTENSEN; ALLEN, SCHARF AND LUNDIN; CHRISTIAN, AND NEWBURGH, MARSH, CLARKSON AND CURTIS

Dr. Louis Faugeres Bishop, New York: Arteriosclerosis has been a hobby of mine for some time. Some years ago I was called on to write a book on the subject and that led to careful study of the literature and to certain conclusions. Dr. Mortensen emphasizes the constitutional nature of arteriosclerosis. He says it is a chemical disease, at least that is my inference, and his studies and observations are of great value. Arteriosclerosis, I believe, is a biologic disease, and his work falls in line with my studies of the last fifteen years, which have to do with the relation of proteins to the human body. The theory that I made the basis of my book was that arteriosclerosis is a disease of the whole body, and I developed a theory that it depends on a condition of the cells of the whole body, that condition being due to a sensitization of the cells of the body to some protein substance. Since that time a great deal of work has been done on sensitization, and I still believe that in general this theory is correct. For some reason or other, either hereditary or acquired, the cells of the body become sensitized to some particular protein, which acts as an irritant to the cells and gradually causes degeneration. Later, a change in the blood pressure develops, the kidneys are damaged and arterial changes follow. It is important to distinguish between arteriosclerosis and atheroma. The hardened arteries of very old persons, with the pipe-stem arteries at the wrist, are not arteriosclerotic; they are atheromatous. Arteriosclerosis is a development of scar tissue in the arteries. The logical outcome of this general theory that the disease is due to disturbances of the cells of the whole body is that certain treatment is indicated. I agree thoroughly with Dr. Mortensen as to the intestinal causation of arteriosclerosis, but I do believe that it is due to the effect of poisoning by some protein to which the body is sensitive; it may be from some infection or from some particular food, or it may be due to protein sensitization, which may very well be hereditary. The treatment directed to this condition is to reduce the number of proteins to the fewest. I do not believe in the low protein, but in the few protein diet. The body can deal better with a few proteins than with a great many, and there is a gambler's chance that the offending protein may be cut out. I have seen arteriosclerosis in persons sensitive to eggs or to beef, and I have seen a delayed effect on the cells from bacterial protein products. The use of castor oil is practical. Every patient with arteriosclerosis who comes to me gets a full dose of castor oil every other day for a week, then a full dose once a week, and after that one every two or three weeks. As long as they live, I have them take a full dose of castor oil every month. I have seen cardiovascular renal cases go along for many years in good condition, with a few protein diet and the castor oil regimen.

Dr. William D. Reid, Boston: We should distinguish between arteriosclerosis without high pressure and arteriosclerosis with high pressure, such as arterial hypertension. Recently I published a paper attempting to put forward a different conception of what is back of arterial hypertension, and I should like to have my theory criticized. Arterial hypertension should be looked on as a condition of the circulation that is present during life, but not after death. It is therefore functional. When the patient is asleep or dies, the pressure falls. Many theories have been advanced and have been used as a basis of treatment, but today there is evidence against most of them. According to my theory, arterial hypertension is dependent on nervous system control of the blood pressure, a diminution of the vagal inhibition or an increase in the action of the sympathetic nervous system, or both. This physiologic explanation of hypertension does not tell us why one patient has it and another patient has not. The condition seems to be attributable to mineral metabolism, particularly a disturbed calcium metabolism. Dr. Mortensen referred to the hereditary element. To my mind the strongest argument against the theory of heredity is that of Eli Moschowitz, who states that these patients are subject to the same conditions of living and inherit the same habits of diet. Arterial hypertension is a matter of diet, particularly as regards its content of calcium and vitamins and of exposure to sunlight.

Dr. Benjamin Jablons, New York: The relationship of arteriosclerosis to meat feeding is a subject that does not receive as much attention as it might. Weinberg, of the Pasteur Institute in France, carried out anatomic studies in carnivorous and herbivorous animals. The carnivora, even among birds, show no changes in their blood vessels, while in all herbivorous animals there are extensive arteriosclerotic changes, especially in rabbits, horses and cattle. This is important in connection with carbohydrate feeding and hypertension. There is a closer relationship between carbohydrate overfeeding and anatomic changes in the blood vessels than there is with protein overfeeding. In thrombo-angiitis obliterans, the patients who show very extensive vascular obliteration have often a low blood pressure. It seems strange that when the vascular field is so extensively damaged, these individuals should not have high blood pressure. The question of essential hypertension in relation to vascular changes is not yet answered. Some cases of essential hypertension show peculiar findings. They bring out what Dr. Christian emphasized, that the nitrogen figures in the blood are not of great importance. Many show no nitrogen retention, yet when studied by the dye excretory tests, such as phenolsulphonephthalein, there is a definite failure to excrete dye. The element responsible for the production of hypertension is not obliteration of the vascular field. It is perhaps methylguanidin or some other substance that produces a systemic effect on blood vessels which is responsible for the increase of the pulse pressure. I think too much attention is paid to organic change in blood vessels as a possible cause of hypertension. In view of these findings, might we not divert our attention from the rôle of protein overfeeding to the more fruitful field of carbohydrate overfeeding and blood vessel change?

Dr. Eugene Sterling Kilgore, San Francisco: Dr. Christian brought out the well known yet always rather surprising fact that patients with chronic interstitial nephritis rarely give a history suggesting a previous acute nephritis, and we are left with the impression that he regards chronic nephritis as always or nearly always developing without the occurrence of a preliminary acute nephritis. The facts in our possession do not seem to me sufficient to warrant any conclusion on this point. Almost all clinical investigation of chronic interstitial nephritis so far has been conducted in institutions whose material is practically limited to advanced stages of the disease, and the histories are obtained from patients usually of lesser intelligence. Furthermore, the kidney is practically a silent organ symptomatically; when, by chance, in routine examinations we occasionally discover a case of acute nephritis, there are as a rule no symptoms except perhaps a little sore throat and slight malaise. It is very rare that these cases can be followed through life to determine their subsequent kidney history. Until we know more about the natural history of chronic interstitial nephritis, we should increase rather than relax our efforts to find the acute cases by urine examinations, especially during acute and supposedly trivial infections. Aside from this practical aspect of the nephritis problem, it is well that we keep in mind our really quite profound ignorance of the early stages of the degenerative diseases in general. The family physician has special opportunities to observe these beginnings of disease, and I hope that the present movement to encourage periodic examinations of the apparently healthy will in time enrich our knowledge in this neglected field.

Dr. Elliott P. Joslin, Boston: Two practical points may be suggested in the performance of routine urinary examinations. Whereas the twenty-four hour specimen of urine is valuable for the estimation of the albumin, total nitrogen and total salt, it is not a good specimen for examination of the urinary sedimenta. Since we have made it the rule to examine the sediments of fresh specimens, the percentage of casts has increased materially. At the hospital we also make it a rule that urine specimens which are not to be promptly examined must be transferred to the ice chest. The second point is a simple one, but promotes neatness and saves time. All urine specimens at the New England Deaconess Hospital are now sent to the laboratory in 3-ounce cylinders, such as one employs for determining the specific gravity. In this way we avoid transferring the specimens, with attendant risks of confusing labels, and we also save much time because the specific gravities can be determined in the cylinders received. With 20,000 urinalyses to do, it is worth while saving half a minute in the analysis of each.

Dr. Herman Schwartz, New York: I have followed acute nephritis for fifteen years, and I am impressed with the fact that acute hemorrhagic nephritis in children is not a disease that is curable. The blood pressure readings show that the patients have gradual increase in blood pressure. A practitioner in a small town has an opportunity to follow these cases for years, and if he does this it will be a profound service to the profession. Younger men could follow such cases for twenty-five years, from early childhood to adult life. The problem of chronic nephritis in adults perhaps begins frequently with acute kidney conditions in childhood. Chronic nephritis with edema is a disease that is fairly rare in childhood, but not so rare as in adult life. The clinical picture that has as its main symptom a chronic recurring edema with albumin in the urine and cholesterol in the blood is different from chronic nephritis without edema. One point which should be emphasized is that this chronic recurrent edema has a fluid which is different from the fluid of the occasional edema in acute conditions. An albumin reaction on the fluid from the nephrosis indicates that there is almost no albumin and 0.01 per cent. nitrogen. Chronic nephritis, with blood pressure, or acute nephritis has a tissue fluid that contains much albumin. I think that chronic nephritis with edema, of which Dr. Christian has had five cases in adults, has nothing to do with the kidneys but is a disease of the tissues. I have seen about twenty-five cases in children.

Dr. M. A. Mortensen, Battle Creek, Mich.: There is a group of diseases, such as arteriosclerosis with hypertension, migraine, bronchial asthma and gout, in which there is a metabolic disturbance in the nature of protein sensitization. This appears to be hereditary and is in keeping with Dr Bishop's remarks on protein sensitization, with reference to the theory of a low protein versus a few protein diet. Few proteins are of value in many cases, but I still think that we must limit the total intake of protein to a physiologic limit. It is unnecessary to limit the protein to either vegetable or animal, but in the advanced cardiovascular renal cases I prefer the vegetable protein. We should not give the patient more protein than is physiologically necessary. Anything beyond this will be a strain to the cardiovascular renal system. I read Dr. Reid's paper with much interest when it was published. I am not in a postion to understand the question of arterial hypertension from a standpoint of nervous system control, but I agree that anxiety increases arterial tension. However, if we try to eliminate the patient's anxiety when taking the blood pressure, we shall usually reach a level at which the readings are a true indication of blood pressure under ordinary conditions. I do not consider thrombo-angiitis obliterans in the same class as the arteriosclerosis or cardiovascular renal disease. I recently saw a patient with extensive thrombo-angiitis obliterans on whom there had been toe amputation because of gangrene; the blood pressure was only slightly increased. The blood pressure in these cases depends on the extent of involvement of the larger arteries. I should like to emphasize what Dr. Kilgore said as to the value of periodic examinations. This applies particularly to cardiovascular renal disease as well as to the cases referred to by Dr. Christian, because in this way we shall find early evidences of the disease. Therapy is of little curative value unless begun early in the course of the disease, and if the condition is discovered only in the late stages, then little impression can be made by any form of therapy. I want to emphasize the importance of careful history taking. It is one of the most important means we have of evaluating the patient's condition. It will reveal cardiovascular renal disease in the family history as well as in the individual and will discover other conditions as well. In this group of cases, if we find that a cardiovascular renal complex exists in the family, we are justified in emphasizing to this family the importance of a properly balanced diet. The protein intake should be limited to physiologic needs, and the salt intake should be kept within reasonable limits. In the children of such families, this program may delay the time at which cardiovascular renal disease manifests itself. In regard to salt free diet—I studied the salt elimination in cardiovascular renal disease without edema a number of years ago, and I found little evidence of salt retention. I have tried salt free diet without success. I should like to have Dr. Allen tell us what he does besides eliminate the use of salt.

Dr. P. L. Marsh, Ann Arbor, Mich.: I did not say in my paper that rabbits on a high protein diet develop sclerosis of the aorta. I think spontaneous atherosclerosis does occur in rabbits, but it is different from the lesion of the human sclerosis. It is a disease of the media rather than the intima. The rabbits develop a lesion that cannot be distinguished from human atherosclerosis. Excess of protein damages the arteries. Under treatment, protein is diminished by most physicians. It is important that we should have actual experimental evidence for the background of our treatment; namely, that high protein diet in an animal will cause sclerosis of the aorta.

Dr. F. M. Allen, Morristown, N. J.: It is interesting to note that in this whole discussion, from the topic of heredity to Dr. Christian's paper on classification and etiology, the theme of functional influences has run through the symposium. The hereditary factor must impress everybody who studies these cases. It is undoubtedly more prominent than is revealed by ordinary histories, and close questioning is always needed. If "asthma" is mentioned in a relative, it may be found to be not a true bronchial asthma but a symptom of unrecognized renal-vascular disease. We have been interested in observing the rôle of sodium chlorid in successive generations, and the influence of its restriction in controlling cases with an hereditary history and in preventing the development of these disorders in the younger members of these families. Observations of this sort may be of interest in the next twenty-five years. The work of Newburgh and Marsh stresses the same functional theme; namely, the rôle of diet in producing renal-vascular disease.

The chief clinical objections to the work of Newburgh and Marsh are three. First, the lesions produced by the protein diets in their experimental animals are not the same as found in human patients. Second, there is no parallelism between the incidence of renal-vascular disease and the protein content of the diet. The Eskimos are said to be relatively free from such diseases, while the Bengalese on their vegetarian low protein diet are highly subject to it. Third, there is no parallelism between nitrogen retention and hypertension or arteriosclerosis. Though we consider protein restriction necessary in all cases of nephritis with impaired nitrogen excretion, we have given red meats and other proteins liberally to patients with hypertension and arteriosclerosis whose nitrogen excreting function seemed normal. In six years no progressiveness of these cases has been found under this policy. Dr. Christian has simplified the nomenclature by breaking away from the pedantic rule of the pathologists that the termination *itis* must not be used unless the condition can be proved to be *inflammatory*—a rule which the pathologists have not enforced in other organs than the kidney. Though the question of origin is not decisively settled, I am inclined to the view that all ordinary cases of renal-vascular disease start from infectious or toxic injury. On this, in the course of years, is superimposed the damage from metabolic wear and tear, and thus occurs the slow development of that majority of cases which Dr. Christian describes. Protein doubtless plays a part in many nephritis cases, but I believe the injury in the predominantly vascular type of cases is chiefly from salt. We have tried to furnish evidence for this view, and have also described the method of treatment, in several publications. Advances must be made not by the old clinical custom of stating beliefs or general impressions, but by presenting detailed experimental or clinical proof for any opinion held.

DR. HENRY A. CHRISTIAN, Boston: My theme was not based on any particular interest in the terminology of classification but my interest lay chiefly in emphasizing the value of a simple classification. Any other terminology and grouping, equally simple, would be acceptable. I think that heredity plays a large part in the vascular group, or what I called "chronic nephritis without edema." How it works I do not know. We are all extremely interested in what Marsh, Newburgh and Allen are doing. We feel that they are getting important results; we are learning more about this question of renal disease each year from their reports. It does not make any difference whether they succeed in producing in animals a disease identical with chronic nephritis in man; they are producing conditions under experimental control which they are studying in a way to throw light on our clinical problems. I agree with Dr. Joslin as to the importance of examining fresh specimens of urine. It is a question of the patient, the physician and the microscope. The best time to examine urine specimens is when we are making other studies on the patient, and we should familiarize ourselves with what the microscope shows. The longer one delays the urine examination and the more one depends on a technician, the less one will get out of it. If the urine stands, many casts may disintegrate. The twenty-four hour specimen has a distinct value, but both should be studied. In regard to the question of acute and chronic nephritis, I am glad that Drs. Kilgore and Schwartz have made these observations. My own observations have not established a relationship between acute and chronic nephritis in the sense of one progressing into the other. Their observations are more suggestive of this relationship. I do not mean to decry the value of blood chemistry, but I say that one can get on without it. Determinations of total nonprotein nitrogen or of urea suffice. Creatinin determinations do not add much of value and may be misleading. Uric acid figures throw no light on the nephritis problem, in my experience. The general practitioner has the opportunity to follow patients in regard to the early stages and the progress of disease, and it is important that they should do so. Such observation by practitioners will be of great value in the solution of the problem of nephritis as well as other problems. The practitioner is in a postion to carry out certain studies better than can be done in the hospital or in the laboratory. Hospital observation and laboratory study, on the other hand, can make studies not possible to the practitioners. A combination of the two will give more valuable results than either one singly.

County Health Service.—County health service, under the direction of whole-time health officers, has become an integral and important part of the public health machinery in many states. Each year it assumes a more important place in the state health programs as additional counties avail themselves of this service and as those health authorities who are interested in one or another special phase of health administration realize that a county health department furnishes the best means for conducting in rural districts each special health activity as a part of a general health program.—Parran, Thomas, Jr.: *Pub. Health Rep.* **40**:983 (May 15) 1925.

AUTOHEMAGGLUTINATION IN CHRONIC LEUKEMIA

REPORT OF CASE *

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Although autohemagglutination has been observed in animals under various conditions [1] and may be induced experimentally in some of them,[2] its occurrence in man is rare. The phenomenon was first noted by Reitmann [3] in 1890, occurring in the blood of a patient with cirrhosis of the liver, and its probable appearance was noted by several other observers during the next two decades.[4] In 1903, however, an accurate study of this reaction was begun by Landsteiner,[1] which was later elaborated by Yorke [5] in 1911, and by Clough and Richter [6] in 1918. As a result, certain characteristic features were established. It was found that in various animals and in man in whom autohemagglutinins existed, the red blood cells would clump or gather together in masses when the separated serum and cells of shed blood were brought together under certain conditions. Among these were the following: 1. This clumping occurred only at temperatures lower than body temperature and was most marked at 0 to 10 C. 2. The cells that were clumped at a low temperature, on being heated to 37 C., would disperse again soon to form a homogeneous suspension. 3. The "agglutinin," or substance in the serum responsible for this reaction, was found to act, not only on the cells of the same individual at low temperatures, but also on the cells or other members of the same species and on the cells of members of different species. Various other characteristic properties were noted.

It is maintained by Yorke [5] that true autohemagglutination occurs quite frequently in trypanosome infections both in man and in animals. In other clinical conditions in man it is apparently of extremely rare occurrence. Aside from those noted by Yorke, only four cases have been found reported in sufficient detail to establish definitely the presence of true autohemagglutination. The cases were: bronchopneumonia;[6] a severe secondary anemia in a pregnant woman;[7] pneumonia following the therapeutic injection of the patient's whole blood,[8] and pernicious anemia with subacute combined sclerosis.[9] Although some criteria were lacking, autohemagglutination has been reported and may have occurred in the following clinical conditions: cirrhosis of the liver (Reitmann[3] and Dudgeon[4]); long-standing epilepsy (Dudgeon[4]); trypanosomiasis (Kanthack, Durham and Blandford,[4] Christy,[4] Dutton and Todd,[4] Martin, Leboeuf and Roubaud[4]); icterus due to hemolysis (Martin and Darré[4]); relapsing fever and syphilis (Todd[4]), and severe anemia with splenomegaly (Debeneditti,[10]).

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[1] Landsteiner, K.: München. med. Wchnschr. **60**: 1812-1814, 1903. Klein, A.: Wien. klin. Wchnschr. **15**: 413-418, 1902. Ottenberg, R., and Thalhimer, W.: J. M. Res. **33**: 213-229, 1915.

[2] Nathan-Larrier: Bull. Soc. de path. exot., 1910, p. 425. Rous, Peyton; and Robertson, O. H.: J. Exper. Med. **27**: 509 (May) 1918; ibid. **27**: 563 (May) 1918.

[3] Reitmann, A.: Wien. klin. Wchnschr. **3**: 404, 1890.

[4] Kanthack, A. A.; Durham, H. E., and Blandford, W. F. H.: Proc. Roy. Soc. B. **74**: 100, 1898. Christy, C.: Brit. M. J. **2**: 1456, 1904. Dutton, J. E., and Todd, J. L.: Mémoir of the Liverpool School of Tropical Medicine, 1903, No. 16, p. 99. Martin, G.; Leboeuf, and Roubaud, E.: Rapport de la mission d'études de la maladie du sommeil au Congo français, 1906-1908, p. 281. Martin, C., and Darré, H.: Bull. et mém. Soc. méd. d. hôp. de Paris, 1909, p. 599. Dudgeon, L. S.: Proc. Roy. Soc. B **81**: 207, 1909. Todd, J. L.: Bull. Soc. de path. exot., 1910, p. 438.

[5] Yorke, W.: Ann. Trop. Med. & Parasitol. **4**: 529, 1911.

[6] Clough, M. C., and Richter, I. M.: Bull. Johns Hopkins Hosp. **29**: 86, 1918.

[7] Kligler, I. J.: [illegible] Human Red Blood Corpuscles, J. A. M. A. [illegible]

[8] Claveaux, E., [illegible] Rev. med. d. Uruguay, Montevideo **27**: 49, 1924; abstr., J. A. M. A. **83**: 879 (Sept. 13) 1924.

[9] Cohen, H., and Jones, A. R.: *Lancet* **2**: *853 (Oct. 25) 1924.*

In these cases the demonstration of a true autohemagglutinin has not been adequate, as the characteristic features established by Landsteiner and his followers have not been recorded. As suggested by Mino,[11] excessive rouleaux formation may have been mistaken for true autohemagglutination in many of these cases.

REPORT OF CASE

History.—J. R., an American, aged 48, who entered the Barnes Hospital, April 13, 1925, complained of weakness, pallor and swelling of the feet. In his large immediate family there was nothing suggestive of a blood dyscrasia other than the death of one brother at the age of 24 from "swollen glands." The patient recalled no childhood diseases or other illnesses bearing on his present condition until he was 25 years of age. At that time he had several attacks of acute right lower abdominal pain extending over a period of two months. The condition was diagnosed "appendicitis," but no operation was performed. He then had good health until the age of 34, when he again suffered severe pains in the abdomen, particularly in the upper portion. These pains came in paroxysms and were associated with deep jaundice, which lasted five months. Since then, the patient suffered frequently from "indigestion," manifested by a feeling of fulness after eating, and belching of gas. The condition was treated by various diets, tonsillectomy and internal medication. The patient had gonorrhea at the age of 20, but gave no history of syphilis. His wife had one normal delivery, a son now living and well, one stillbirth, and no miscarriages. There was no history of excessive alcohol or nicotin indulgence. The patient had always worked in one factory where wooden boxes were constructed.

Three years before admission (age 45), the patient developed a fever and had an occasional chill. This condition was diagnosed "malaria," although it occurred during the winter months. Following this attack he felt numbness, tingling, and severe sharp pains in the fingers, forearms, toes, legs and face whenever he was exposed to the cold. The extremities and face would become so blue that his friends would comment about his remarkable appearance. These symptoms would disappear shortly after entering a warm atmosphere. He had no recollection of abdominal pain at these times, but stated that he urinated frequently and that the urine resembled port wine in color. The onset of the attacks was soon followed by weakness. The patient was easily fatigued, and pallor became noticeable. Similar attacks occurred in the following winter, with entire freedom in the summer months. There were no attacks during the past winter when the patient was too ill to be outdoors. Six months before admission, he was obliged to stop working, because of weakness. Recently he acquired dyspnea, palpitation on exertion, edema of the feet, and dizziness. Four days before admission a blood transfusion was given, which was followed by a marked reaction. This reaction, from the story of the patient, must have been severe. It was later determined that the donor used was incompatible.

Physical Examination.—The pathologic findings were as follows: There was marked pallor of the skin, associated with a faint yellow tint. The mucous membranes were pale, and the sclerae bluish white. The panniculus was somewhat loose, and the muscles were soft. No petechiae or purpuric spots were found. There was slight edema of the feet. The superficial lymph nodes were slightly enlarged. The tongue was pale but not glossy. The teeth for the most part were replaced by plates, and the few remaining ones were dirty, with surrounding gingivitis. The lungs were hyperresonant excepting at the right base, where there was dulness and where the breath sounds were diminished. This change was probably caused by a large liver. Elsewhere, breath sounds were unimpaired, with the exception of a few crackling râles at both bases posteriorly. The heart was essentially normal, aside from an occasional extrasystole. The peripheral vessels were not thickened. The systolic blood pressure was 136; the diastolic, 85. The abdomen was slightly above the level of the costal margin. The liver edge was palpated 10 cm. below the tip of the ensiform cartilage and 9 cm. below the costal margin in the midclavicular line. The spleen was just palpable, but the splenic area was somewhat enlarged to percussion. Careful neurologic examination revealed no abnormalities.

Laboratory Findings.—An accurate red blood cell count was difficult to make as the result of the immediate clumping of the cells in the diluting fluid. When, however, precautions were taken to use a warm pipet, warm diluting fluid and warm stage, an approximation was made possible that indicated a count probably somewhat below one million. The hemoglobin was 20 per cent. (Dare). The white blood cells varied from 24,000 to 45,000, and a typical differential count was as follows: polymorphonuclears, 19 per cent.; small lymphocytes, 30 per cent.; eosinophils, 1 per cent.; endothelial leukocytes, 5 per cent.; transitionals, 2 per cent. Abnormal cells were: myelocytes, 7 per cent.; myeloblasts, 11 per cent.; lymphoblasts, 25 per cent. There were two normoblasts per hundred white blood cells. The myeloblasts and lymphoblasts were differentiated by their reactions to the vital stains janus-green and neutral red, according to the technic described by Sabin.[12] The red cells showed a moderate degree of anisocytosis and poikilocytosis; the platelets appeared normal. No parasites were found. By carefully washing the cells at incubator temperature, it was possible to type the blood, which was found to be Group I (Jansky). The blood Wassermann reaction was negative to cholesterol and alcoholic antigens. A fragility test showed hemolysis, which began in 0.46 per cent. and was complete at 0.38 per cent. sodium chlorid solution. The clot retracted normally. The surface tension of the serum was 61 dynes (drop weight method). Blood cholesterol in the plasma was 0.113 per cent.; in the cells, 0.130 per cent. Gastric analysis of the fasting contents revealed free hydrochloric acid absent; total acidity, 7 degrees; extraction one hour after test meal revealed free hydrochloric acid, 4.5 degrees; total acidity, 22 degrees. The guaiac test for occult blood was negative. The stool examination showed no notable abnormalities. Spinal fluid, 12 c.c., was clear and under normal pressure; there were 2 cells; a test for globulin (Pandy) was + +; the colloidal gold curve was 1111100000. The Wassermann reaction was negative in all dilutions. The basal metabolism was 30 per cent. above normal.

Course in Hospital.—April 17, a blood transfusion of 500 c.c. given by the direct method from a Group I (Jansky) donor was followed by no reaction. Ten days thereafter the autohemagglutination became much more marked, and it was impossible to make a blood smear unless the slide had been heated previously. About this time, the spleen began to enlarge perceptibly, and on May 18 the lower edge could be felt 9 cm. below the costal margin. May 28, a second transfusion of 500 c.c. of whole blood, given from a compatible donor, was followed by a slight chill accompanied by generalized muscular pain. In addition to the transfusions, six doses of neo-arsphenamin totaling 2.25 gm. were given. A red count, just before discharge, showed 1,200,000 cells and 35 per cent. hemoglobin (Newcomer), and differential counts varied little throughout his stay in the hospital.

TEST FOR AUTOHEMAGGLUTINATION

In order to confirm the presence of true autohemagglutination, blood was drawn from a vein into a Luer syringe, previously heated to 40 C.; it was transferred to a flask, which was immersed in a warm bath, immediately defibrinated, and finally filtered through paper on a "hot filter." The cells and serum were separated by centrifugalizing, with precautions to maintain a warm temperature by surrounding the tubes with warm oil in the centrifuge cups. The serum was removed by pipet and placed on ice. The cells were washed six times with warm sodium chlorid solution (0.85 per cent.), and a 2 per cent. suspension of the cells was made in the saline solution. Diluted serum (0.5 c.c.) was added to each of a series of tubes already containing 0.5 c.c. of ths suspension of cells. Sodium chlorid (0.85 per cent.) was used to dilute the serum, the final dilution in the tubes being 1:20, 1:40, 1:80, 1:160, 1:320, 1:640 and 1:1,280. Two tubes were used as controls, the one containing merely the cells suspension further diluted with saline solution and the second containing 0.5 c.c. of the suspension and 0.5 c.c. of a 1:20 dilution of normal Group I (Jansky) serum. The tubes were placed in the ice chest at 14 C. for twenty minutes. Marked clumping occurred in all dilutions, while no clumping occurred in the control tubes. The agglutinated cells, which appeared as a mass at the bottom of the tube, could be separated into rather large clumps by shaking. Microscopic examination revealed marked agglutination. The tubes were then placed in a water bath at 37 C., in which there was a complete dispersion of the clumps both macroscopically and microscopically within fifteen minutes. In the ice chest the clumps reappeared. This process was repeated three times. The controls showed no clumping at any time. No hemolysis could be demonstrated.

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[10] Debeneditti, V.: Policlinico (sez. med.) **31**: 311 (June) 1924.

[11] Mino, P.: Policlinico (sez. med.) **31**: 69 (Feb.) 1924.

[12] Sabin, F. R.: Bull. Johns Hopkins Hosp. **34**: 277 (Sept.) 1923.

That the serum would act in a similar manner on cells of other species was demonstrated by repeating the foregoing test, sheep cells being used at one time and rabbit cells at another. The highest dilution of serum used with rabbit and sheep cells was 1:320, when moderate agglutination occurred. The action of the serum on the cells of other species was exactly the same as that which was observed when the patient's own cells were used.

COMMENT

The exact classification of the leukemia is uncertain. The diagnosis of chronic myelogenous leukemia is suggested by the consistent appearance of relatively large numbers of myelocytes and myeloblasts in the circulating blood. On the other hand, the presence of lymphoblasts, together with the increase in the absolute number of normal lymphocytes, suggests the possibility of a lymphatic type of the disease.

The history of cyanosis of the extremities on exposure to cold, followed by the passage of port wine colored urine, is suggestive of paroxysmal hemoglobinuria, although no hemolysin could be demonstrated on repeated attempts while the patient was in the hospital. A negative blood Wassermann reaction on four occasions argues against this diagnosis. Because of the profound anemia it did not appear justifiable to attempt, deliberately, to induce hemoglobinuria by chilling the extremities.

Clough and Richter[6] found traces of autohemagglutinins in the blood of the daughter of their patient, and suggested an hereditary tendency. The blood of the son of the patient here reported was carefully studied, but no evidence of autohemagglutinins could be demonstrated.

Robertson and Rous[2] have been able to induce autohemagglutination in the blood of rabbits by repeated transfusions. In the case reported by Claveaux and Sanchez,[8] this condition was shown after repeated injections of the patient's own blood. It is interesting to note that the patient had received a transfusion from an incompatible donor (Group II [Jansky] to Group I [Jansky]) just prior to admission, and also that the autohemagglutination became even more marked following a second transfusion from a compatible donor.

SUMMARY

True autohemagglutination has been observed in a case of chronic leukemia of undetermined type.

The autohemagglutination satisfies the criteria established by Landsteiner, Yorke, and Clough and Richter, by possessing the following characteristics:

(*a*) Agglutination occurs only at temperatures below body temperature.

(*b*) The agglutinated cells disperse when the temperature is raised again to body temperature.

(*c*) The agglutinin will act in like manner on human cells and on cells of various animals.

The patient's symptoms at one time suggest that he had paroxysmal hemoglobinuria, although no autohemolysin could be demonstrated recently.

600 South Kingshighway.

INDUCED HYPERTHYROIDISM

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In view of the large number of articles on the use, abuse and dangers of iodin in the treatment of goiter that have appeared during the last year, further statements along this line may seem superfluous. Our experience, however, in the service with which I am connected, leads us to believe that there must be considerable misinformation or misunderstanding regarding the proper use of iodin in the treatment of goiter, and that a brief statement of our experience with patients in whom hyperthyroidism has resulted from the use of iodin in cases of goiters of long standing may serve as a warning to those who first see these patients.

Nothing has been added to the knowledge of the relation of iodin to the normal function of the thyroid gland established by Marine[1] and his associates. Our experience agrees with the statements by Marine, Graham and others that there is no consistent pathology of goiter; that is, the clinical findings do not indicate specific pathologic changes in the gland, and the histologic pictures of the thyroid do not indicate definite clinical entities.

In order to determine if possible whether or not harm may result from the routine use of iodin in the prophylaxis of goiter as it has been carried out in this district since 1917, a study has been made of those cases of hyperthyroidism in which some form of iodin has been administered.

In the series of 2,659 cases of hyperthyroidism treated by us during the four and one-half years between March 5, 1921, and Sept. 1, 1925, there were 309—263 women and forty-three men—in which it appeared that the symptoms of hyperthyroidism had been precipitated or made worse by the use of iodin. In 210 cases, or 68 per cent. of the whole series, the goiters were of long standing, the average period being eighteen years. In each of these cases, the gland was clinically or microscopically adenomatous.

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[1] Marine, David: Etiology and Prevention of Simple Goiter, Medicine 3:453-479 (Nov.) 1924; Functions of the Thyroid Gland, Physiol. Rev. 2:521-551 (Oct.) 1922; The Importance of Our Knowledge of Thyroid Physiology in Control of Thyroid Diseases, Arch. Int. Med. 32:811-827 (Dec.) 1923.

In this group of 309 cases, there were six cases in which the only source of iodin had been iodized salt. All of these patients were women past 40 years of age, and each had a nodular goiter of long standing. Several others had a similar history, and we were about to include them with this group, but on further investigation we found that they were also taking iodin, which had been prescribed, in such quantities as to make the amount of iodin received in the iodized salt appear negligible. It should also be stated here that we have often seen toxic adenomas in middle aged women who have not taken iodin.

Induced Hyperthyroidism

Total number of cases of hyperthyroidism	2,659
Total number of cases of induced hyperthyroidism	309 (11.6 per cent.)
Induced by:	
Iodized salt	6 (2 per cent.)
Self medication	37 (12 per cent.)
Medical treatment	266 (86 per cent.)

Thirty-seven patients had taken iodin of their own volition; several had taken a solution of sodium iodid, but the great majority had used repeated external applications of tincture of iodin over the goiter.

The most striking fact brought out by our study is that five sixths of our patients having induced hyperthyroidism had been taking iodin as prescribed by their physicians. In twenty-one cases of goiters of long standing, compound solution of iodin (Lugol's solution) had been given for weeks, in doses of from 5 to 10 drops, three times a day. In many cases, 5 drops of the solution of sodium iodid, three times a day, had been prescribed, and a considerable number of these patients had taken this medication for as long as three or four months. One boy, aged 16 years, who had a congenital adenoma, had taken syrup of ferrous iodid, 1 dram (3.75 c.c.), three times daily, continuously for eighteen months. Suffice it to say that in 84 per cent. of the cases of toxic goiter which we have seen, the physicians had prescribed large doses of iodin to be taken over a long period of time, and this treatment had been given in spite of the fact that the goiter was of long standing and in many cases, nodular in type.

In all cases of iodin treatment, the dosage should be considered in terms of milligrams. The maximum dosage for an adult, provided there are no contraindications, is 10 mg. daily for not longer than one month, during which time the patient should be under very close observation. As we suggested two years ago,[2] we have prescribed one iodostarine tablet to be taken daily throughout alternate months, and we have seen no toxic symptoms resulting from this treatment. That even this small amount of iodin should be used with caution, however, is illustrated by the history of a man, aged 29, who recently came to us with a marked hyperthyroidism. His mother and three sisters had goiters, and he had had a small goiter since childhood. This had started to enlarge about five months before we saw him, and his physician had given him three iodostarine tablets daily for over three months; that is, he had been taking one-half grain (0.03 gm.) of iodin daily for 100 days. Even with the small dose of one iodostarine tablet daily during alternate months, the patient should be under close observation by his physician.

As has often been stated, and has recently been emphasized by Jackson,[3] long standing goiters in adults should be treated surgically, if any symptoms of hyperthyroidism are present. In young adults and in adolescents, medical treatment should first be tried; but in this treatment, as stated above, we should always think of iodin in terms of milligrams rather than of grains.

I think we can safely say that there is no danger in the routine prophylaxis of goiter as it is carried out through the schools; namely, the administration of 10 mg. of iodin weekly. Among our forty cases of exophthalmic goiter in children, only one child had been given iodin. In this case the patient had received the prophylactic treatment of 10 mg. of iodin a week for one month, three months before the onset of the acute hyperthyroidism, and a review of the history shows that it is only fair to assume that the onset of the hyperthyroidism in this case was a coincidence and not a result of the month of iodin treatment. With the thousands of girls taking the prophylactic treatment, similar coincidences should be expected in the future.

As indicated above, our studies show that toxic goiters may result from the use of iodized salt in cases of adenomas of long standing; here again, however, these cases may be entirely coincidental, and too much emphasis should not be placed on this point.

In the medical treatment of goiter in adults, we wish to emphasize the importance of care in the selection of cases; the use of small amounts of iodin for not longer than one month, and the necessity of close observation throughout this period.

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THE PROBLEM OF MALIGNANCY[*]

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"By Doubting we come to Truth."
—*Cicero.*

"Who never doubted, never half believed,
Where doubt, there Truth is."
—*P. J. Bailey.*

The history of medicine during the last century is one of the great romances of the world, corresponding to that wonderful epoch in history when Columbus set forth on his voyage of discovery and the Portuguese, rounding the Cape of Good Hope, found their way to India and the East.

As in the sixteenth century, so today in medicine, whole new worlds have been opened up by those who, using the microscope and laboratory methods as their vessel of discovery, have navigated and charted the new worlds of science. Once more, as when the Spanish and Portuguese divided the known and unknown world between them, there is a dividing line, imaginary, no doubt; and, on the one side, we have the possessions and observations of the old order of naked eye or microscopic observation, and, on the other, the accurately mapped new fields that have fallen to the microscope. The mass of microscopic discovery has added so greatly to the sum of medical knowledge that today it is a human impossibility to master the whole of it, while the older macroscopic knowledge and observation have, by comparison, been almost eclipsed. Yet, with all the advances, there is one problem on which even the microscope seems to shed no new light, i. e., the cause of cancer; for all will agree that, in spite of the world-wide research and the voluminous writings on the subject, we know practically nothing more than our fathers as to the nature of human cancer.

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[2] Kimball, O. P.: Prevention and Treatment of Simple Goiter, J. Michigan State M. Soc. **22**: 390-393 (Sept.) 1923.

[3] Jackson, A. S.: Iodin Hyperthyroidism, Am. J. M. Sc. **130**: 271-283, 1925.

[*] Read before the meeting on radiology in the Section on Miscellaneous Topics at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

In the last twenty-nine years, however, a new light has crept in on this dread and growing scourge (300 per cent. increase in the last seventy years), one which has not, I think, received the consideration it should have, especially from the macroscopic point of view, for investigators of the problems of disease are all looking to the microscope to aid them in discovery, and the new type of radiations do not fall within its field of vision. In the case of cancer, the eyes of all radiologists have been turned on the definite but elusive curative effects of the new rays and, maybe, we have neglected to note "the writing on the wall" as we pushed onward with more and more powerful radiations in our search for the cure of the disease.

We have written of our successes and failures in treatment, and of the tantalizing uncertainty of our results, and we have recorded the roentgenographic appearance of cancer, but have we stopped to take stock and think what these things mean? Have we turned to examine our observations from the point of view of the nature of the disease, quite apart from any thought of the cure? Or have we also been content to take it for granted that the microscope, and the microscope only, is the chosen vessel of discovery? When Columbus saw the failure of the Portuguese navigators in their search for the Indies, he decided to set sail in the opposite direction on his voyage of discovery, for it was obvious that the fabled Indies must lie somewhere. So, in like manner, let us look in the opposite direction, forsake the microscope and the assumption of its infallibility, and consider a variety of radiologic and clinical observations for which I claim no originality or expert knowledge, and which are of the older macroscopic school.

Under roentgen-ray and radium treatment, the cure or arrest of the progress of some malignant growths is a definite fact, and we know with certainty that we have applied some factor which has altered the normal course of events. Many of our observations, however, are matters that are not susceptible of scientific proof, but are commonly accepted by those who practice radiation therapy. Others again are matters of surmise only, resting on no definite scientific data, in which, from long experience, one has a definite impression, a clinical sense, which may or may not be shared by others.

RADIOSENSITIVE AND RADIO-INSENSITIVE CANCERS

Under the generic term "cancer" we include a number of diseases that are characterized by cell overgrowth, and that normally end in the death of the patient. The two great groups of the carcinomas and sarcomas are subdivided, by the microscope, into a number of less clearly defined varieties; but in the natural course of events, they all carry the one definite common factor, death, as their ultimate termination. Some are rapid in their course, others less so. Some tend to extend locally only, others to rapid dissemination, and, generally speaking, the microscopic examination of the type of cell will give an indication of the prognosis. Yet every surgeon and every radiologist occasionally encounters an apparently hopeless growth that melts away as if by magic, while an exactly similar case, microscopically and macroscopically, runs its course entirely uninfluenced by the same treatment. In the early days of radium, Wickham recorded the apparent cure of a carcinoma of the uterus with what would now be regarded as a futile dose, and almost every early worker with the roentgen ray had occasional incomprehensible and cheering results of the same order.

At the present time, Wintz, quoting figures of his uterine and cervix cancer "cures," states that "in spite of the best technique, most favourable conditions and good general health of the patient, the results are from time to time inexplicable."

He states that from 15 to 20 per cent. of absolute failures occur even in the cases in which his past experience would lead him to expect a successful result. Observers are generally agreed that, as a class, the malignant growths of the cervix are those which are most likely to yield a fair proportion of satisfactory results. The reason for this probably lies in the fact that in postmortem examination it is found that 55 per cent. of these gynecologic cases show entire freedom from metastases, whereas breast cancer yields only 3.2 per cent. freedom from metastases in the postmortem records (Lazarus Barlow).

There are, however, evidently different types, histologically identical; at the one end of the scale, those easily influenced by radiations, at the other, those that are quite intractable; i. e., radiosensitive and radio-insensitive types. Since all living tissues can be killed by destructive doses of radiations, all growths are classed as radio-insensitive that have the same or a greater degree of radiotolerance than the surrounding normal structures.

The problem of malignancy as seen by the radiologist is full of contradictions, and it is clear that neither the clinical character nor the cell form of the constituents, although usually reliable, is the definite criterion as to the real nature of a tumor. For want of a better classification, we must, therefore, still give the same name to histologically identical growths, although some of them disappear under radiations while others persistently extend and recur, regardless of all the wiles of the radiologist. One cannot help feeling that there is some fundamental difference in the two, and that this difference is not expressed in the cells that are seen under the microscope. The one is a radiosensitive and the other a radio-insensitive tumor. As yet, the only means of determining the identity of each is by watching the effect of radiation treatment—an agency that may be applied in homeopathic, medicinal or such destructive doses that they "cure the disease and kill the patient."

MALIGNANT CAUSATIVE DISEASE

Certain cases are landmarks in every medical man's experience, and the following is the only one I shall mention in detail, for it is my purpose, as far as possible, to view things from such a distance that detail is lost. The first case was not labeled as one of the regular types of malignant disease, but out of it arose the train of thought that is embodied in this present paper.

In 1910, a healthy boy, aged 15, an only child, came with large masses of glands in the left groin and right side of the neck, and smaller masses elsewhere. The spleen also was slightly enlarged, and it was diagnosed as a case of acute lymphadenoma. No changes were found in the blood at any time, except slight secondary anemia. He was treated with the roentgen rays, and the glands disappeared. He went away to the hills, but was back in a fortnight, gasping for breath, and with large masses in the mediastinum. These also quickly disappeared, but the boy, though apparently well again, was kept under observation and frequent treatment. Glands appeared from time to time in all the usual sites, but were always easily disposed of.

There was some swelling of the hands and feet, and these became exceedingly painful. Roentgenograms showed definite changes in the bones of one of the hands. Roentgen-ray treatment cured the pain and swelling completely, and he could dress himself and use ordinary boots. But gradually the boy lost strength, in spite of the fact that every gland disappeared under treatment almost as soon as it was detected. Hundreds of lymphoid nodules appeared in the skin of the back, and in other situations, some breaking down and forming ulcers about three-fourths inch in diameter, and these also yielded to the magic. When only a portable coil and accumulators were available, even the masses in deep situations yielded. Yet all the time the weakness and slight cachexia increased, and after fifteen months of the toughest medical fight I ever had, the boy died from exhaustion.

It was one of the most disheartening cases imaginable, for the faith of the parents and son was kept up the whole time by the obvious effects of the rays; and yet, to the onlooker, it was clear that it was only the glands and nodules, the symptoms, the accidental factors, that were influenced. There was evidently some underlying cause at work that we were not touching at all by our radiations. In this case, at any rate, it was perfectly clear that there was a definitely malignant disease at work, of which the lymphoid overgrowths were but a symptom. Without roentgen-ray treatments, the glands would have wrought death, accidental, as I term it, in a few weeks; but with treatment, the accidental death was averted, and we had the picture of the underlying malignant disease running its slow and certain course, unaffected in any way by the rays. The outstanding impression on my mind was the fact of an underlying malignant disease which was giving rise to enormous overgrowth of all lymphatic tissue, these overgrowths being practically malignant growths, although they did not tend to invade surrounding structures.

And then, on the other side of the picture are two very early private cases, clinically almost identical, so far as one could see, in which the diagnosis was retroperitoneal sarcoma originating in the suprarenals.

In one case, a boy, aged 9 months, no operation was performed. In the other, a girl, aged 15 months, the late Prof. G. A. Wright explored, found a typical sarcomatous mass that was friable and almost breaking down, and which he did not attempt to remove. Both these infants were irradiated with such apparatus as we had in those days—at the most, the tubes would not stand more than half a milliampere at perhaps a 3 to 4 inch spark gap. There were no filters except a layer of felt, and the skin was hardly bronzed. Yet both these children recovered completely, and are now normal healthy adults. What had wrought this change? I know not, but it was quite certain that these malignant growths were affected by something, presumably the rays, in spite of the fact that so little could have reached the required depth. And the impress of these two cases on my mind was that of a locally malignant growth, fortunately of an unusually radiosensitive type, in which the originating cause had disappeared.

From these isolated and rather unusual cases, therefore, I came to look at cancer cases in a different light. It occurred to me that perhaps a malignant growth might be originated by a malignant causative disease, and that these two elements might exist concurrently, or that the malignant causative disease, having started the malignant cell overgrowth, might die out, leaving the malignant growth to accomplish the death of the patient, but thwarted in the case of these two infants by the fact that the growth was particularly radiosensitive and that there were no untreated metastases.

TYPES OF DEATH FROM CANCER

There is one, and only one, certain proof of malignancy, i. e., the death of the patient, for neither the clinical nor the microscopic characters of the cells are infallible evidence of malignancy. If a patient recovers from what was clinically and microscopically a malignant growth, we write it down as either a miracle or that the diagnosis was wrong. One man put it that the radiologists' successes in cancer were the clinicians' failures in diagnosis; but this is far too sweeping and is not justified by experience, for these miracles are too frequent and too dramatic to be interpreted in this way. If the patient recovers, however, we can never say with certainty that he had been suffering from a malignant disease, for death is the one and only infallible proof that the process that we have been watching or treating is a malignant one. No clinical and no microscopic evidence is infallible. Microscopic cell forms and malignancy are not necessarily synonymous terms.

Death is the natural end-result, the one common factor; but the manner in which life is extinguished differs very widely and calls for more than passing consideration.

1. The first, and far the commonest, cause of death is that some vital organ is invaded by the direct extension of the primary growth or its metastases. This form of death is accidental and not an essential part of the malignant disease, for it is something approaching pure chance whether the growth attacks a vital part early or late. A very malignant type of growth in one part of the body may take a long time to kill the patient if situated in some less vital spot. One could, in fact, imagine a growth extending almost without limit, provided it maintained its blood supply, if it did not invade a vital organ.

2. Secondly, there is death from septic infection with its resulting absorption, its cachexia, debility and gradual wasting. This, again, is not an essential part of the malignant disease, although death supervenes. Within the body, this source of danger to life is still only too common, but, thanks to the roentgen ray, we see less and less of this type of death from external ulceration, with its festering and fetid ulcers.

3. The third and much more unusual type of death suggests that, as in my lymphadenoma case, there is another factor, one of which I have no proof but of which I am fully convinced. We see some devitalizing process at work and we usually attribute it to the effects of undiscovered secondary deposits; but, in many cases, I feel certain that it is largely the manifestation of an underlying malignant disease which unfailingly results in the gradual weakening of the patient, with cachexia and loss of energy and strength, and which ends inevitably in death from exhaustion. Whenever we see a cancer patient with cachexia, apart from septic absorption, we know that, no matter whether the mass responds or does not respond to radiations, the patient will steadily go down hill and die, and in the terminal stages the temperature will rise, quite apart from the presence of any sepsis. This, to my mind, is the manifestation of the working of the true malignant disease. Provided the patient lives long enough, this process is seen in varying degrees of intensity, but is always subject to the intervention of death from one of the intercurrent or "accidental" causes—invasion of the vital organs or sepsis. It is seldom, if ever, seen in rodent

ulcer, but its presence is often suggested in those forms of malignant disease of slow growth in which metastases are not attacking vital organs, and it gives one the impression that not only are the ordinary causes of death in these diseases (extension and sepsis) accidental, but many of these growths are only an incident or accident in an underlying malignant disease. In order to save repetition, I will call this hypothetic and entirely unknown quantity, this essential underlying malignant process, X, and I may as well say at once that I believe it will eventually be found in the blood, and that it may disappear after originating the growth and also that it may vary widely in intensity quite apart from the type of growth it evokes.

I believe that this X occurs in every case of true malignant growth, and yet, how can one explain the fact that certain cases are cured by surgery or by radiations, while others persist and spread, either directly or by metastases, in spite of all we can do? Think of a case of a rodent ulcer that fails to respond. The patient often remains in perfect health until sepsis or extensions slowly end the scene. It is a purely local disease, and there seems to be no X in the case at all. It is merely a locally malignant disease and one which, mercifully, is usually radiosensitive. It does not even tend to extend by metastases but only by direct spread. If X was ever present in the case, it has disappeared.

Now let us look at the type of breast growth in which all the conditions seem to be particularly favorable for operation, so far as the surgeon can tell. In some of these, a recurrence comes in or about the scar, which may respond perfectly to comparatively mild roentgen-ray treatment, and we see an apparent local cure. Unfortunately, however, there are only too often secondary deposits elsewhere that we cannot detect, and these are usually the "accidental" cause of death, and yet one feels practically certain that if these patients had been irradiated early enough, there would have been no metastases, and we should have obtained an apparent cure, as we actually do in a considerable number of such cases. Occasionally, one has the good fortune to treat a case of this type that is not complicated by operation. I see a woman from time to time who five years ago had a large and typical inoperable scirrhus with extensive glands in both the axilla and above the clavicle, and yet, today, the patient is in perfect health, and there is not a sign of any previous disease in the breast. In another case, the breast became almost normal under radiations in the period of waiting for a bed in the hospital. The obvious thing to say, of course, is that the diagnosis was wrong; but in a large number of what must have been similar cases, in which the surgeon states that he has been able to remove only a portion of the growth, the patients are alive and well to this day. The cases are far too numerous to be accounted for by throwing doubt on the diagnosis of the clinician and microscopist. I interpret these very encouraging results by thinking of them as of only local malignancy, apart from their metastatic spread. They happen to be radiosensitive, and we obtain an apparent cure; the cause, the X that originated the growth, has disappeared, and if the growth is completely eliminated by operation or by radiations or by a combination of the two, an actual cure is effected.

Then one thinks of other radiosensitive cases in which, although recurrences disappear under the rays, others come up, and often we are also successful in dealing with these as they occur—the cause, the X, is still at work, and sooner or later death comes, usually by internal deposits in vital organs and sometimes accompanied by the cachexia, etc., that is associated in my mind with X.

Among those cases that seem to offer every prospect of success and in which irradiation is done at the earliest possible moment after operation, there are some in which growths recur in or about the scar and which are quite uninfluenced by the rays; i. e., radio-insensitive. They spread by direct extension in spite of all we can do. Occasionally, a change in the type of radiation raises our hopes for a time, but nevertheless death comes, generally by metastasis. And yet, this absolutely uncontrollable radio-insensitive disease seems to differ in no outward or microscopic characteristic from the other type which is radiosensitive and which, apart from metastases, seems to promise such good results.

In many of these breast cases, however, in addition to the growth, there seems to be some other factor at work. The tumor itself may have the same clinical and microscopic appearance as those in which we have obtained apparent cure, and it may or may not respond locally to radiation; but, no matter what we do, there is the gradual wasting associated with cachexia which is, to my mind, evidence of the true underlying malignant disease X which, when once established, never seems to falter in its course, but unfailingly brings death, no matter what happens to the growths, the cell overgrowth that takes place in its presence. The patient gets weaker and weaker, develops a rise in temperature, and eventually dies from exhaustion, occasionally with so little of the cancerous growth itself that it looks very doubtful whether the tumor could have been the cause of death. In its course, it resembles a case of pernicious anemia, complicated by a growth.

In some of the breast cases, one can trace the same course of events as in the boy with lymphadenoma, but less accurately and in a much more complex picture that is distorted and obscured by the malignant tumor and its symptoms. Sometimes one gets a clear impression of the underlying cause at work if the growth happens to be radiosensitive, and we note the progressive weakness, which we usually ascribe to internal secondary deposits. I suggest, however, that, in part at least, it may be put down to the continued action of my hypothetic X.

SUSCEPTIBILITY OF CANCERS TO IRRADIATION

I have chosen to speak in terms of those types of cancer which are most common and most easily observed, but my general impression of growths in other situations is on the same lines; i. e., that there are two distinct types, clearly differentiated by the manner in which they do or do not respond to radiation. Some are much more susceptible than others in their reaction as well as by reason of their accessibility; but underlying, and at the back of all of these, there is a malignant causative disease, which may or may not persist after it has done the deadly work of initiating the growth.

In the radiosensitive type, we may hope for complete success if we can locate and eradicate the primary focus and its metastases, only if this underlying factor has disappeared; but if X is still at work, even in a very mild form, we shall not succeed in the end, for sooner or later, recurrences, even if they are of radiosensitive type, will come where we cannot detect them, and death follows.

In the radio-insensitive type, we can do nothing but watch the progress of the growth and its metastases. When X is not at work, one has seen these tumors pursuing their tragic course for a year or more, with comparatively little, if any, lowering of the patient's vitality, till nerves are involved, when pain and loss of sleep undermine the patient's strength. The end in such cases is often pathetic, and it is a merciful release when, at last, some vital organ is put out of action.

In those cases which I suggest are due to the persistence of the true malignant cause, X, the picture, if we can eliminate the obsessing factor of the growth itself and its symptoms from our minds, is one of increasing debility, of the type of pernicious anemia, and it is this disease which I would suggest as the simile of the underlying malignant disease. This fatal type of blood change is not associated with cell overgrowth, but we all know how frequently a case diagnosed as pernicious anemia turns out, in the end, to be "due" to an internal growth. I suggest that in these cases of mistaken diagnosis we may have been confusing cause and effect, and it is possible that some of the cases of so-called pernicious anemia are the uncomplicated action of my hypothetic X.

NATURE OF X

I suspect that this X is a blood condition, possibly a very delicate biochemical change that has a selective stimulating action on the growth of certain types of cell under favorable conditions, the type of cell affected depending on the nature of the biochemical change. Of the conditions we know nothing; but if one might indulge in pure speculation for a moment, one might accept X as a temporary or permanent blood condition, very slight changes determining whether its action should influence one or another of the different types of cell to cancerous growth. Suppose that at the time this slight blood indisposition occurred, there was irritation of, say, the breast cells, making them susceptible to the influence of X, it might stimulate these cells to disordered overgrowth, forming a malignant tumor that would normally run its fatal course, while the underlying malignant disease, the blood change, entirely disappeared. The patient is operated on and there is a "cure." One could imagine the same sequence of events occurring again after many years, and surely this is a more reasonable explanation than to think of malignant cells lying dormant for perhaps as long as twenty years.

Or we may suppose that the malignant disease in the blood gets a strong hold, and no matter what treatment the growths receive as they appear, the cause will still be at work, stimulating other groups of cells of the same type into activity, for the selective action of X is most definite. At the same time, each of these growths is capable of dissemination in the various well recognized ways, and before the malignant disease makes its presence known as a separate entity, the growth has completely filled the picture. Suppose, however, X does not find any injured cells on which to act, or maybe the blood change does not happen to be one that affects any particular type of cell until very late; then we get the picture of the cases that approximate to pernicious anemia.

This, of course, is all pure fantasy, and put down simply to give more concrete form to my rather nebulous ideas as to the nature of X.

It is, however, a most remarkable fact that a patient seldom suffers from two types of cell overgrowth at the same time. Scirrhus of the breast and similar types of growth elsewhere, colloid, columnar, squamous, round or spindle cell overgrowth, many are the types, but there is only one type as a rule in one patient.

In the boy who forms the subject of my text, the malignant disease disordered the reproduction of the lymphoid cells, first in one region, then in another, and later on, practically universally, but never any other type of cell. Because these happened to be radiosensitive, we could watch the almost undisturbed progress of the malignant disease itself. In breast cancers, it is only too common an occurrence to find the other breast affected, and, with a cellular formation, that is identical with the first growth.

Thanks to our teaching, we are so taken up with the idea that all secondary manifestations arise from the one primary growth, and that the cause of the growth is contained in the mass itself, that we do not think of the possibility of some outside cause that may stimulate similar cell elements in other parts of the body and that some of them may be entirely independent growths, originated by the same cause.

To my mind, the hypothesis I have suggested gives a much clearer idea of those unaccountable metastases that we could not explain on any reasonable grounds. We will all accept that a metastatic deposit may travel by the blood stream, and we must also accept that the lymph stream carries the trouble along its course in the direction of its flow. We must also accept the fact that a growth creeps, say, across the middle line from the breast, and we can trace the nodules in the course of spread by direct extension; and yet we see many cases of recurrence in the opposite breast, often in the outer upper quadrant with not a trace of intervening growth. It is not just an occasional happening; it is a thing we are always looking out for, and the only explanation that is given is that it is lymphatic extension, against the flow of the lymphatic stream. Such an explanation is against the laws of physics and experience, and I suggest that my hypothesis offers a much more reasonable explanation. The X that caused the original trouble is still present or has recurred, and it has affected another group of cells of the same class, stimulating them to malignant activity. In one such case that I saw, after writing this, I noted three things. The right breast had been removed, and there was (1) direct extension of small nodules in the skin across the middle line and elsewhere; (2) a large mass in the upper outer quadrant of the other breast with glands in the axilla, and (3) another curiously placed and much larger recurrence well below the scar. This last was puzzling till I thought of the possibility of a rudimentary breast in such a position. I believe that in this patient X was still at work, and in addition to the frequently noted stimulation of a growth in the other breast, it had affected the cells in a rudimentary breast in addition and these two centers of growth were not recurrences in the ordinary sense, but actually new primary growths set up by the same unknown factor that had initiated the original breast tumor.

Is it not reasonable to suggest that the cause which originated the primary growth may still be at work in these cases, and that it may set up a similar type of growth in other parts that contain the same cell formation?

I had intended to outline relevant observations on postoperative breast treatment, blood changes and manifestations in bone, but time will not permit. I can only state that there are observations that give credence to the theory I have put forward.

CAUSE OF CANCER

Does this theory help us in any way toward the elucidation of the great problem? I think that it does, for it suggests very strongly that it is waste of time and energy to look for the cause of cancer by gazing down a microscope at the sections of a cell overgrowth, the end-result of a factor that may or may not have been present when the specimen was taken. That, perhaps, is a negative benefit. It does, however, indicate that if we are to find the cause, we must sift our cases and attempt to determine accurately in which of these X is still at work and find out in what way the blood differs from those in which the disease is only locally malignant; i. e., in which X is no longer present. It is among the living, not among the dead, that hope lies. Certain observations as to changes in bones make me confident that the cause of malignant cell overgrowth is a systemic one, and the obvious inference is that it will be found in the living blood. Until we know with certainty in which cases X persists, we must search every cancer case and particularly attempt to find a difference in the blood constituents between those that develop the ill omened cachexia, as compared with those in which the disease is only locally malignant, as shown by operation or radiation "cures."

I am quite satisfied that it is useless to look for the cause of malignant disease in the growth itself, and that the exciting cause will eventually be found elsewhere, either in the blood or carried by the blood, and that it will probably be found in some minute biochemical change which affects the reaction of the blood on certain types of cell, those cells being particularly susceptible that have suffered from some mechanical or inflammatory source of irritation, or which in the natural course are undergoing degenerative changes at the end of their life of functional activity.

SUMMARY

It is a usual custom to summarize a paper, and I am indebted to my partner Dr. Morison for the following, which he handed to me after reading an early manuscript:

> Let X be the underlying cause of cancer.
> Let G be a tumor that is radiosensitive.
> Let D be the death of the patient.
> Let L be the life of the patient.
> Let O be the operation.
> Let R be the radiation treatment.

$$\begin{aligned} \text{Then } G+X&=D\\ G-X&=D\\ \left.\begin{aligned}G+X+R\\ G+X+O\end{aligned}\right\}&=D\\ G-X+O&=\frac{L}{2}\\ G-X+O+R&=L \end{aligned}$$

Therefore, the only cases in which we can hope for cure are those in which we have a radiosensitive growth, an absense of the underlying cause and complete extirpation, either by operation or by radiation or by a combination of the two. But if a growth is radioinsensitive, the chances of life are not increased by radiation and in fact are diminished if radiations are carried to the extent of interfering with the natural resistance of the tissues.

ABSTRACT OF DISCUSSION

Dr. B. H. Orndoff, Chicago: Dr. Barclay has called attention to most of the important phases in which medical men of today are striving for the control of this disease. One point in his paper seems to be the crux of contention among the workers in both clinical and experimental research, and that is what he refers to as the X, or the essential underlying malignant process. Dr. Barclay referred to the X as "hypothetic" and an "entirely unknown quantity." Recent research in physics and the work of Maud Slye of Chicago, on the heredity of cancer in mice, seem to throw light into this most obscure phase of the subject. I believe that Dr. Slye has proved the heredity of cancer in mice, and that heredity and the biologic reaction in mice are manifested in the same manner in man. The electrical constitution of matter is better understood in the light of recent research, and now we have results from the investigations of the electrical resistance of different tissues, electric conductivity, ionization effects, and many other physical phenomena in normal and abnormal tissues, on which conclusions of important characters are being drawn. The study of the tissue reaction to irradiation must involve a consideration of tissue reaction to ionization, and this, in turn, requires a knowledge of the electrical constitution of the atoms composing these tissues. That the principal physical reaction in irradiated tissues is a disturbance in the existing interatomic relations seems very probable. Further, it seems reasonable to believe that variation of the interatomic relations constitutes one of the conditions of age, nutrition, functional capacity, etc., of living tissue albumins and may go far to explain many important biologic conditions connected with this problem, both from the diagnostic and the therapeutic standpoint. An apparatus has been constructed for the purpose of attempting to alter the interatomic relation in tissues, and I hope in the very near future to be able to report the results of some clinical research. It seems quite possible that the cachexia, the toxicosis of mysterious origin, the intrinsic malignant disease, the X of Barclay, may be elucidated eventually through further studies on heredity and interatomic relations in tissues.

THE ULTRAVIOLET RAY AS A PROPHYLACTIC AGAINST RADIODERMATITIS *

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Many years ago, John Remer and the senior writer noticed that acute sunburn appeared to enhance the effect of roentgen-ray and radium radiation on human skin. It was also remarked that tanning of the skin, resulting from repeated exposures to the sun, did not materially increase the toleration for roentgen-ray irradiation. With these impressions in mind, it was with no little surprise that we read one article after another in which it was averred that actinotherapy is capable of greatly increasing skin toleration for roentgen-ray irradiation; and that the ultraviolet ray possesses the power of mitigating and even preventing the deplorable results of excessive roentgen-ray and radium dosage.

In 1915, Becker [1] reported that he had substantially increased skin toleration for the roentgen ray by tanning the skin with the ultraviolet ray before subjecting the patient to roentgen-ray treatment; and there have been several subsequent assertions of a similar nature by foreign authors. On the other hand, Reyen of Copenhagen, in a personal interview, was of the opinion that actinotherapy does not decrease "radiosensitiveness"; that acute ultraviolet ray reactions tend to increase the affect of roengenization, but that actinotherapy is of value in the treatment of chronic roentgen-ray ulcers.

In this country, Sampson's article,[2] published in 1922, evoked a great deal of interest and comment, most of which is unpublished. It will suffice to give the gist of

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[1] Becker, P. F.: Fortschr. a. d. Geb. d. Röntgenstrahlen **14**: 175, 1909; Strahlentherapie **6**: 405, 1915.

[2] Sampson, C. M.: Am. J. Roentgenol. **9**: 570 (Sept.) 1922.

Sampson's report. The part to be subjected to intensive roentgen-ray irradiation is first exposed to intermittent ultraviolet irradiation over a period of four weeks. The treatments are of a strength sufficient to evoke erythema or vesiculation. The exposures are repeated as soon as the reaction caused by a previous treatment subsides. Whether or not tanning results is immaterial. During the entire month, the patient also receives generalized actinotherapy with erythema doses. These treatments are administered several times weekly. Beginning the same day, but subsequent to the hyperintensive roentgen-ray irradiation, erythema or blistering doses of the ultraviolet ray are applied to the roentgenized area daily or every second day for about a week. Both water-cooled and air-cooled lamps are employed. As a result of this procedure, Sampson finds that it is possible to give approximately five times the erythema dose of heavily filtered roentgen rays (8 mm. of aluminum) without effecting erythema or epilation. He emphasizes the necessity of vigorous actinotherapy subsequent to the roentgen-ray treatment. He considers that this is of as much importance as the antecedent treatment, if not more.

Pacini[3] approached the subject rather cautiously, and his conclusions are not particularly definite. He appears to believe that roentgen-ray erythema and superficial roentgen-ray injuries may be prevented to some extent by actinotherapy; that skin toleration for roentgen-ray irradiation is perhaps amplified, but that this prophylactic influence does not extend to a depth of more than 75 or 100 microns, which is only about 0.1 mm. In this connection, Hasselbach[4] finds that approximately 60 per cent. of the longest or most penetrating ultraviolet rays are absorbed by 0.1 mm. of epithelial tissue. As absorption for any given wave length is approximately exponential, the direct effect of ultraviolet irradiation on roentgen-ray and radium injuries at a depth greater than a few fractions of a millimeter must be negligible. That generalized actinotherapy can modify metabolism, alter blood chemistry, give rise to certain vitamins, change the blood count, influence general resistance, perhaps affect the endocrines, produce pigment, influence skin chemistry, ferments, etc., appears to be the consensus of opinion, but there is as yet no proof that any of these attributes of ultraviolet rays modify the local biologic action of roentgen rays or radium rays to any great extent. To finish with Pacini's report, after this short digression, attention should be directed to the fact that he tested the prophylactic affect of preliminary actinotherapy by tanning a number of areas of skin and exposing these areas and an equal number of untanned adjacent areas to an erythema dose of the roentgen ray. In every instance, the erythema was the same in all areas.

In 1924, Rulison[5] inadvertently administered several times the standard erythema dose of unfiltered roentgen rays to a very small area of skin on the face of a man, aged 63. This was followed by very vigorous treatment with the Kromayer lamp every day or two for about two weeks. The roentgen-ray reaction did not exceed that of the first degree, whereas, without the subsequent actinotherapy, Rulison is convinced that there would have been a very serious injury.

A few months later, Swanberg,[6] in a commentary on Rulison's report, called attention to the fact that nine and even a larger number of erythema doses of the unfiltered roentgen ray may be administered at one sitting to small areas of skin, in some instances and under suitable conditions, without effecting more than a second degree reaction, and that such reactions heal spontaneously in a few weeks. He quotes Grier,[7] who has had a similar experience. Rulison, by arithmetical computation, estimated his dose as 4⅓ skin units, a skin unit being the usually accepted standard erythema dose. Swanberg also employed the same method of estimation in order to compare his results with those of Rulison's. Arithmetical computation, as generally employed, is not of proved accuracy and it has not been approved by physicists. It has been customary to figure that intensity varies as the voltage, but there is reason to believe that it varies as the square of the voltage. There are other objections to the arithmetical method which need not be discussed at present. We simply desire to call attention to the fact that at the present moment the arithmetical method of computation is not sufficiently accurate for experimental purposes unless suitably controlled. John E. Lane,[8] who recognized the danger of accepting Sampson's hypothesis, warned his colleagues not to depend on the supposed prophylactic action of actinotherapy in the absence of irrefutable proof.

In a recent publication, Traub[9] advises the combined use of ultraviolet rays and roentgen rays for the treatment of acne vulgaris. He believes that the former, in addition to being a good treatment for acne, will permit larger doses of roentgen rays, will help to prevent radiodermatitis, and also tend to prevent such sequelae as atrophy and telangiectasia.

Foveau de Courmelles,[10] and Mathieu and Pech,[11] have reported what they believe to be increased sensitization to roentgen rays produced by antecedent and simultaneous actinotherapy. Foveau de Courmelles is of the opinion that one type of irradiation may lessen toleration for the same kind or for a different kind of irradiation. As he is a disciple of anaphylaxis and allergy, he thinks that it may be possible to sensitize or desensitize a patient, an attractive but not very practical concept that is in line with the physiologic complement idea of Sampson. Somewhat irrelevant to this article but in relation with the idea just expressed, Auer and Witherbee[12] state that they have raised the resistance of the skin of rabbits to roentgen rays by the injection of horse serum. However, none of these allergy experiments have been corroborated.

It might be well to state here that the resistance of certain normal and pathologic cells to roentgen rays may be increased by previous roentgenization, although just how this is accomplished is not well understood. Russ, Chambers and Scott,[13] Ewing,[14] Fleisher, White and Loeb,[15] Murphy and his collaborators,[16] and others have recorded carefully conducted experiments in this line, particularly in relation to the lymphocyte and the cancer cell. Many roentgenologists have called attention to the fact that a number of diseases may be favorably influenced at first by roentgenization, but after such treatment the disease may cease to react favorably to irradiation. Such diseases are epithelioma, psoriasis, mycosis fungoides, leukemia and Hodgkin's disease. On the other hand, such diseases as acne vulgaris may be made much worse by the first few weeks of fractional roentgen-ray treatment, while a continuation of such treatment will result in a cure. It is not germane to this article to speculate as to the cause or significance of these phenomena. Suffice it to say that there is, as yet, no satisfactory evidence to support the belief that the normal human skin will tolerate substantially larger quantities of roentgen rays without permanent injury because of previous roentgen-ray irradiation. In fact, the clinical evidence is mostly to the contrary. Even though it may be demonstrated that a given cell may develop a certain type of acquired resistance to irradiation, such a fact should not be interpreted as indicating that greater amounts of roentgen-ray irradiation may be administered without injury to local tissue or to the organism.

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[3] Pacini, A. J.: J. Radiol. **4:** 410, 1923.

[4] *Hasselbach, K. A.: Biochem. Ztschr.* **19:** *435, 1909, quoted by* Lane, C. G.: Newer Physiology of Skin, Arch. Dermat. & Syph. **9:** 176 (Feb.) 1924.

[5] Rulison, R. H.: J. A. M. A. **83:** 1505 (Nov. 8) 1924.

[6] Swanberg, Harold: Prophylaxis of Roentgen-Ray Overdosage, J. A. M. A. **83:** 1704 (Nov. 22) 1924.

[7] Grier, G. W.: *J. Radiol.* **2:** *39 (Nov.) 1921, quoted by* Swanberg (Footnote 6).

[8] Lane, J. E., in discussion on Lane, C. G.: Newer Physiology of the Skin, Arch. Dermat. & Syph. **9:** 176 (Feb.) 1924.

[9] Traub, E. F.: New York M. J. & Rec. **90:** 122 (July 15) 1925.

[10] De Courmelles, Foveau: Paris méd. **12:** 292 (Sept. 30) 1922; *Gaz. d. hôp.* **95:** *954, 1922.*

[11] Mathieu, P., and Pech, J. E.: Rev. méd. de l'est **49:** 257, 1921.

[12] Auer, John; and Witherbee, W. D.: Reactions of Normal Skin to Destructive Doses of Roentgen Ray, J. A. M. A. **76:** 301 (Jan. 9) 1921.

[13] Russ, S.; Chambers, H., and Scott, G.: J. Path. & Bacteriol. **23:** 477 (Dec.) 1920.

[14] Ewing, James: Radium in Cancer, J. A. M. A. **68:** 1238 (April 28) 1917.

[15] Fleisher, White and Loeb.: Centralbl. f. Backteriol., Part 1 **63:** 450, 1912.

[16] Murphy, J. B.: Heteroplastic Tissue Grafting Effected Through Roentgen-Ray Lymphoid Destruction, J. A. M. A. **62:** 1459 (May 9) 1914; J. Exper. Med. **20:** 397, 1924; **22:** 204, 800, 1915; **24:** 419, 1916.

A perusal of the literature dealing with the prophylactic action of the ultraviolet ray encourages the opinion that conclusions may have been formulated and developed, ideas evolved, concepts constructed as a result of haste, faulty premises, inaccurate judgment and technic, and erroneous interpretations. It would seem as though the known biologic effects of various quantities of roentgen-ray irradiation of different qualities have received inadequate attention. The same may be said of the influence of age, sex, complexion, location, disease, thickness of epidermis or derma, idiosyncrasy, dimension of treated area, etc. In many instances, too, the experimental work was not carefully controlled.

Most of the foregoing possible sources of error are well known. It is not so generally recognized that an erythema dose of the roentgen rays, especially filtered rays, may be applied to one area of skin and double the dose administered to a contiguous area of the same size with very little difference between the visible reactions of the two areas. In some instances, it is possible to apply four or five times the standard erythema dose without provoking more than a moderately intense visible reaction. This may be due to age, the thick, horny layer of the skin, the small size of the area treated, and similar conditions. It should be borne in mind constantly that a visible reaction does not indicate the intensity or depth of biologic alteration. While a double or triple erythema dose may not evoke a visible reaction that is much greater than a single erythema dose, one cannot doubt that the biologic reaction is correspondingly greater. Furthermore, the various possible degrees of visible reaction with variations in half tones, edema or erosion are not well standardized. One observer will designate a given reaction as mild, while to another observer the same reaction might be considered moderate or intense. It should be obvious that visible reactions are not very accurate guides in experimental work and that they must be carefully interpreted.

The possibility of technical errors is considerable. The variation in output from different Coolidge tubes may be as high as 80 per cent. It is probable that this tube difference combined with errors of voltage, current and distance may result in a total error of between 100 and 200 per cent., as estimated by ionization, even when the operator is an expert and the apparatus of modern type. The point we desire to emphasize is that, while modern roentgen-ray technic is sufficiently accurate for diagnostic and therapeutic purposes, it is by no means absolutely precise, and one reason that this excellent therapeutic and diagnostic agent may be used with safety is that animal tissue apparently tolerates a large error of dosage. In other words, there appears to be a wide margin of safety. In this connection, we[17] have demonstrated that an experimental error of 100 per cent. may be detected only with difficulty by skin effects.

When one considers all the foregoing possibilities, it is obvious that conclusions must be very cautiously constructed, especially when the experimental work is done by other than pure scientists.

The subjoined simple clinical study was made in an attempt to ascertain whether or not the ultraviolet ray is of any real value as a prophylactic against radiodermatitis. It was not our aim to determine slight alterations in "radiosensitiveness" resulting from direct or indirect ultraviolet irradiation. Routine practical technic was employed, and the visual results were recorded. While such a procedure would not satisfy the physicist or the biologist, it provides useful information for practical roentgenologists and dermatologists.

The roentgen-ray apparatus consists of a 10 kilowatt direct current interrupterless transformer equipped with a rotary converter, sharp-pointed spark gap, rheostat control, kilovoltmeter and two milliampere meters. The same medium focus Coolidge tube was used for each treatment. The filament current was obtained from a separate rotary and was controlled by a very sensitive choke coil. The needles of the meters remained stationary throughout the exposure. The factors are given with each observation.

OBSERVATION 1.—*Treatment.*—Parental consent to use routine roentgen-ray treatment, combined with ultraviolet irradiation, was obtained for ten children affected with disseminated tinea capitis. The scalps of two of the children received repeated erythema and blistering doses of the ultraviolet ray for two weeks prior to the roentgen-ray treatment, at which time the scalps were well tanned. The scalps of the two patients were given also large doses of the ultraviolet ray every three days for two weeks subsequent to the roentgen-ray treatment. The other eight children received one blistering dose of the ultraviolet ray on the scalp immediately following the application of roentgen rays. Before any treatment was given, the scalp hair was cut very short. Both the Kromayer and alpine lamps were used.

The roentgen-ray treatment consisted of the routine unfiltered epilating dose for scalp hair administered in accordance with the five-exposure Kienböck-Adamson method. The factors were: 2 milliamperes; spark gap, 6 inches; distance, 8 inches; time, three minutes (1 skin unit). This constitutes the minimum unfiltered epilating dose for scalp hair of children between the ages of 4 and 10.

In each instance, the hair fell out about as usual during the third week. If anything, the defluvium began a little sooner and was a little more complete than is customary. These patients remained under observation for many months. The hair regrew in a normal manner and the disease was cured.

Comment.—Repeated intensive applications of ultraviolet rays administered to the scalp both before and after a minimum epilating dose of roentgen rays, do not materially enhance or retard the depilatory value of the latter.

OBSERVATION 2.—*Treatment.*—Three small areas of the same size and about an inch apart, were selected on the inner surface of the thigh of a blonde girl, aged 16. The patient was about to begin a course of fractional roentgen-ray treatments for acne vulgaris of the face and back. In all such cases, we now advise toleration tests on the forearm or thigh before applying the irradiation to the face. The patient consented to the toleration tests combined with the ultraviolet ray. Area A was given an erythema dose of the ultraviolet ray from a Kromayer lamp at a distance of 3 inches for three minutes. Area B received an identical exposure plus an erythema dose of unfiltered roentgen rays (3 milliamperes; spark gap, 6 inches; distance, 8 inches; time, 2 minutes 30 seconds; dose, 1¼ skin units). Area C received an identical dose of roentgen rays, but no ultraviolet rays. Area A depicted a vivid erythema thirty-six hours after the treatment, which persisted for five days, and then subsided rapidly with slight desquamation and no tanning. Area B developed a marked erythema, which persisted for seven weeks and was followed by deep pigmentation, which endured for six months. Area C developed a faint erythema eight days after exposure, which disappeared in ten days, leaving slight pigmentation, which lasted about two weeks.

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[17] MacKee, G. M., and Andrews, G. C.: Am. J. Roentgenol. **11**: 525 (June) 1924; **12**: 58 (July) 1924.

Comment.—In this instance, a single erythema dose of the ultraviolet ray, administered almost simultaneously with an erythema application of the roentgen ray, distinctly enhanced the effect of the latter.

OBSERVATION 3.—*Treatment.*—A woman, aged 66, consulted us because of senile skin with numerous keratoses and epitheliomas; also severe pruritus vulvae. She gladly consented to toleration tests in combination with the ultraviolet ray, in preparation for the roentgen-ray treatment of her epitheliomas and pruritus vulvae.

Dec. 10, 1924, and about every four days thereafter for eight weeks, the patient was given generalized alpine lamp treatment. In all, thirteen treatments were administered. At each sitting, the anterior and posterior surfaces of the entire body were divided into three large areas. Each area received an exposure at a distance of 10 inches, increasing in time from thirty seconds to three minutes. A circular area of skin, 3 inches in diameter, on the left buttock, was exposed about every four days during the eight weeks to the radiation from a Kromayer lamp, in addition to the alpine lamp treatment. The Kromayer lamp treatments were administered under firm pressure. The time was gradually increased from one minute to eight minutes with a full current. Both the alpine and the Kromayer lamp exposures produced erythema and exfoliation, and at times edema, vesiculation, exudation and crusting, and resulted in tanning of the entire body, the tanning being most pronounced in the small area on the left buttock.

Feb. 5, 1925, 4 skin units of the unfiltered roentgen ray was administered to each of two areas of the skin 1 inch square. One area occupied the center of the area on the left buttock that had been exposed to the Kromayer lamp; the other area was symmetrically situated on the right buttock; both areas had received alpine treatment. The factors used were: 3 milliamperes; spark gap, 6 inches; distance, 8 inches; time, 8 minutes. The last Kromayer lamp treatment was administered two weeks previous to the roentgen-ray exposures.

One week after the roentgen-ray treatment, erythema was noted in each area. It is not known which appeared first. February 19, the erythema of the left buttock was the more intense of the two. February 26, three weeks after the roentgen-ray treatment, the erythema of the left buttock was about three times more intense than that of the right buttock.

March 5, there was edema and intense erythema in each area, with vesiculation and crusting in the area on the left buttock. The clinical appearance was about the same on the 19th.

March 28, almost two months after exposure to roentgen rays, erythema was much more intense on the left buttock than on the right side. The edema, exudation and crusting had disappeared. The erythema disappeared from both areas about a month later. The pruritus vulvae was cured, as were the epitheliomas and keratoses.

Comment.—Antecedent vigorous actinotherapy perceptibly decreased toleration for roentgen rays. The observation also demonstrates that four times the standard erythema dose of the unfiltered roentgen ray may be administered to aged skin without effecting more than a mild reaction.

OBSERVATION 4.—*Treatment.*—A man, aged 39, of moderately dark complexion, had leprosy.

Feb. 3, 1924, an area of skin 1 inch square, on the left cheek, was exposed to unfiltered roentgen rays, the following factors being employed: 5 milliamperes; spark gap, 8 inches; distance, 10 inches; time, 3 minutes 54 seconds. In the center of the area there was a small leprous nodule.

February 16, thirteen days after the treatment, there was moderate erythema which had almost disappeared by March 12. March 19, one month after exposure, there was no erythema.

This patient did not receive ultraviolet-ray treatment. The leprous nodule disappeared.

Comment.—The same factors were used in this observation as published by Rulison, and the location was about the same. Our patient, however, was younger. The observation supports the contention of Grier that actinotherapy did not prevent a severe roentgen-ray reaction in Rulison's patient.

OBSERVATION 5.—*Treatment.*—A man, aged 67, presented an indurated, prickle-cell epithelioma which occupied the left half of the lower lip, an inoperable case.

Oct. 18, 1924, the lesion and a portion of the surrounding normal skin were given an exposure with unfiltered roentgen rays consisting of 3 skin units (3 milliamperes; spark gap, 6 inches; distance, 8 inches; time, six minutes). This was followed by intense erythema which disappeared in about two months.

Seven weeks later, Feb. 3, 1925, the same area was given an exposure with unfiltered roentgen rays, Rulison's factors being used: 5 milliamperes; spark gap, 8 inches; distance, 10 inches; time, three minutes, fifty-four seconds. Twelve days later, there was a slight erythema which endured only five days. There was complete epilation, but the hair returned. Actinotherapy was not used. The epithelioma was markedly improved.

Comment.—This observation supports the results of Observation 4.

OBSERVATION 6.—*Treatment.*—A man, aged 58, presented numerous seborrheic keratoses scattered over the face, and a small basal-cell epithelioma on each cheek. The treatments included a small area of normal skin on each cheek in the center of which was an epithelioma. The roentgen-ray dose for each cheek was the same as that published by Rulison. The left cheek received roentgen rays only. The right cheek was given vigorous alpine lamp treatments at frequent intervals for two weeks prior and subsequent to the application of roentgen rays. Defluvium occurred in each area on the eighth day. The visible roentgen-ray reaction of the right cheek was somewhat more intense than that of the left cheek. The latter consisted of erythema and slight edema, which disappeared in about three weeks. The erythema of the right cheek disappeared in about six weeks. At the end of seven weeks, both areas showed pigmentation that was rapidly fading. There was a thin crust in the center of the area on the right cheek. At the time of the last inspection, there was no evidence of epithelioma.

Comment.—Vigorous ultraviolet irradiation, applied locally both before and after an intensive dose of roentgen rays, enhanced the action of the latter as compared with a control. This observation supports Observations 4 and 5.

OBSERVATION 7.—*Treatment.*—In the patient used for Observation No. 4, two small areas were selected, each of which contained a leprous nodule. One area was on the left cheek; the other on the right buttock. March 19 each area was given 4 skin units of the unfiltered roentgen ray: 3 milliamperes; spark gap, 6 inches; distance, 8 inches; time, eight minutes. Immediately subsequent to the roentgen-ray treatment, an area on the right buttock, 3 inches square, in the center of which was the roentgenized area, was given a blistering dose of the ultraviolet ray from the Kromayer lamp. The quartz front of the lamp was pressed firmly against the skin for ten minutes with full current. No ultraviolet irradiation was applied to the face.

March 28, nine days later, there was a moderately severe erythema of the face area, but no edema. The large oval area on the buttock, which had been treated with the ultraviolet ray, depicted intense erythema with crusting and exfoliation. In the center of this area, there was a scarlet red, swollen, crusted square where the roentgen rays had been applied.

April 8, the area on the cheek exhibited intense erythema with some edema. With the exception of pigmentation, the ultraviolet ray reaction on the buttock had disappeared. The roengenized square, in this location, depicted intense erythema, edema, exudation and crusting, with a split-pea sized central ulcer.

April 16, about one month after the treatment, the edema and most of the erythema had disappeared from the cheek. There was a little exfoliation in the center. The roentgenized buttock area consisted of a superficial discharging ulcer with a necrotic base and hyperemic margin.

April 23, the face area depicted pigmentation but no erythema. The ulcer on the buttock had healed. Erythema was still present, but this soon disappeared. The leprous nodules were cured.

Comment.—In this instance, erythema and edema resulted from four skin units of the unfiltered roentgen ray applied to a small area on the face. The same dose applied to the buttock area, plus a blistering dose of the ultraviolet ray, effected a more severe roentgen-ray reaction. It is the consensus of opinion that the face is more "radio-sensitive" than the buttock. This observation supports previous observations. It demonstrates that four times the standard erythema dose of roentgen rays may result in no more than a first degree reaction, and that an acute ultraviolet ray reaction may enhance the effect of roentgen rays.

CHRONIC ULCERS AND SEQUELAE

Practically all authors agree that actinotherapy is of value in the treatment of chronic ulcers caused by roentgen rays and radium and also for the treatment of telangiectasia. Hazen,[18] Pacini, MacKee,[19] Reyen and others have obtained good results with such treatment in cases of telangiectasia. While we have found actinotherapy (Kromayer lamp) of distinct value, especially when the area of telangiectasia is small, the results are by no means all that might be desired. Repeated blistering doses over a long period of time are often necessary, and the patients find such treatments very annoying, particularly when the affected surface is extensive, or if the face is involved. Failures are common, especially when there is much atrophy or hyperkeratosis. In the case of one patient, a single blistering dose of ultraviolet rays, applied under pressure with the Kromayer lamp to an area of telangiectasia on the neck, resulted in areas of atrophy, depigmentation and dehematization. Between these areas, telangiectasia still persisted. The cosmetic or esthetic appearance was worse after than before the ultraviolet ray treatment. Another case of profuse telangiectasia of the back was treated with repeated blistering Kromayer lamp exposures under pressure. This resulted in distinct atrophy in addition to depigmentation in round areas where the lamp was used.

While small doses of the ultraviolet ray seem useful in the treatment of chronic roentgen-ray and radium ulcers, it is possible that too much has been taken for granted. Ulcers of this type, after persisting for many months, may heal spontaneously and with considerable rapidity. Whatever treatment is being given at the time is likely to receive undeserved credit. However, we have encountered cases in which healing seemed to be the direct result of actiontherapy; therefore, it is our impression that such treatment is of value for this purpose.

CONCLUSIONS

1. Actinotherapy is of some value in the treatment of chronic ulcers and telangiectasia caused by roentgen rays or radium.

2. Vigorous actinotherapy, resulting in acute reactions, at or near the time of roentgenization, may enhance the result of the latter.

3. Tanning of the skin by actinotherapy does not materially increase toleration for roentgen rays or radium.

4. Preliminary, generalized actinotherapy, even when continued for a long time, does not appear materially to decrease "radiosensitiveness."

5. It is possible to administer several or many times the standard erythema dose of roentgen rays to normal human skin without effecting more than a mild visible reaction. Ignorance of this fact may account for the erroneous assumption that actinotherapy is a prophylactic against roentgen-ray and radium injuries.

6. It is our opinion that the ultraviolet ray, regardless of how employed, is of no practical value as a prophylactic against acute or chronic radiodermatitis.

7. It is our opinion that a combination of the ultraviolet ray and the roentgen ray is more likely to be followed by sequelae such as telangiectasia than when the roentgen ray alone is employed.

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ABSTRACT OF DISCUSSION

Dr. Howard Fox, New York: Many of us were astonished at the assertions of Sampson that the effects of the roentgen ray could be neutralized by ultraviolet irradiation. Such a condition of affairs would have been very comforting in cases in which an overdose of roentgen ray had been inadvertently given by omission to use a filter, etc. In administering the roentgen ray in quantities approaching an erythema dose, we had been accustomed to avoid all extraneous sources of irritation, including ultraviolet irradiation. On this particular point, MacKee had always laid stress. This paper would seem to show that the contentions of Sampson are incorrect. We should continue as before to be as conservative as possible in the use of the roentgen ray, avoiding particularly overdosage, which may be followed by telangiectasis or other ill effects.

Dr. Fred Wise, New York: There is no doubt about the great importance of this subject to all those who use the roentgen ray, and more work in this field should be carried out by as many men as possible. The experiments of MacKee and Andrews are definite, but as we occasionally hear unpublished reports of supposedly beneficial results from the use of ultraviolet light following excessive roentgen-ray exposure, there may be many features of the subject we have not yet ascertained. The thing to do is to repeat MacKee and Andrews' experiments and see what else we can learn. The question arises as to whether the pigment deposit following ultraviolet rays has anything to do with the claims which Sampson makes. I do not think it has much to do with it in the way of inhibiting the effect of roentgen rays, for urticaria pigmentosa and the pigmented sarcoma of Kaposi often respond very well to roentgenotherapy. I think the tanning and pigmentation of the skin have very little to do with it. One thing that should be emphasized is the process of depilation. It seems to me that if a patient with tinea capitis receives a depilating dose of roentgen rays preceded or followed by ultraviolet light, with the usual resulting defluvium within from seventeen to twenty days, then the inhibitory effect of the ultraviolet light must be discounted. The action of the roentgen ray on the hair follicle provides one of the standards of measurement. If the hair falls out seventeen days later, as it does, in spite of superimposed ultraviolet light exposures, the assumption that the latter inhibit the biologic effects of roentgen rays must be at fault. Another important point brought out by the speakers is in respect to secondary radiations. An area of skin about one-fourth inch in diameter may be exposed to four skin units of roentgen rays at one sitting, without provoking a second degree radiodermatitis. If one experiments with small areas, using ultraviolet rays in connection with roentgen rays on such small portions of integument, the apparent inhibitory effect of the ultraviolet rays is apt to result in erroneous interpretations. The reason for this is that secondary radiations from roentgen rays are reduced to a minimum in such small areas of exposed skin; if larger areas are exposed, the effects of secondary radiations manifest themselves in the form of varying degrees of radiodermatitis as a result of excessive dosage.

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[18] Hazen, H. H.: Am. J. Roentgenol. 9: 101 (Feb.) 1922.

[19] MacKee, G. M.: X-Rays and Radium in the Treatment of Diseases of the Skin, Philadelphia, Lea and Febiger, 1921, p. 325.

Dr. Jeffrey C. Michael, Houston, Texas: Some experiments of my own corroborate the conclusions reached by the speakers. Two children with tinea capitis were given the usual one skin unit epilating dose, using the Kienböck-Adamson method of measurement. One child received ultraviolet light to two areas surrounding the anterior and occipital points before the roentgen-ray treatment; the other received the ultraviolet light subsequent to the roentgen ray. Sampson's directions for the employment of ultraviolet light were followed carefully. In these two cases, there was no difference in the fall or return of hair in the areas receiving ultraviolet light plus roentgen ray and those areas treated with roentgen ray alone. In addition, an experiment in which an acute radiodermatitis was produced was performed. It happened that a child living in an institution had a peculiar nevus of the scalp which for certain reasons it was thought best to remove surgically. This gave an opportunity to use an unusually large dose of roentgen ray. A small circular area in the normal scalp was first given one skin unit, and the diaphragm in the lead shield was enlarged and a larger area, inclusive of the previously irradiated one, was given an additional skin unit, both doses being unfiltered. Ultraviolet light was then applied at intervals, Sampson's instructions being followed. Epilation resulted in the entire area; hair returned in the outer zone, but none in the smaller central one for the five months that I was able to keep the child under observation.

TEETH AND EYE RELATIONS

SOME FINDINGS CORRELATED *

WILL WALTER, M.D.
EVANSTON, ILL.

GENERAL SURVEY

This paper may be regarded as a preliminary report on a research. It is not an accepted part of ophthalmology to follow leads into other fields, but it is a most interesting and valuable byplay for the investigator. It makes the practice in any field pleasurable. Research into primary causation is always worth while and can cover many avenues. This particular one, namely, the orientation of foci in teeth by other than dental means, has occupied me more than three years. It is not possible to evaluate what, if anything, has been accomplished; but this citation will perhaps help by broadening the outlook and by stimulating effort by others. I am still working on this phase of the subject and on measures of prevention, both specific and nonspecific, hoping to minimize the development and dangers of these foci.

During my thirty-three years of effort in ophthalmology and rhinolaryngology, it has happened, as is the experience of every worker in every department of the art of healing, that many disorders of unknown etiology are encountered. In the combined field, it happens that the nose and throat occupy more the position of portals of entry for disease, while the eye manifestations, particularly the intra-ocular structures, are dominantly blood borne and thus secondary. I have encountered, therefore, almost daily problems of cause and effect.

We have in the eye nearly all types of tissue, including brain cortex, since the retina is made up of cortical cells connected with the deeper structures by the finest of fibrils through optic nerve and tract; structures that resemble other brain tracts. The nuclei of these fibers lie in the retina; hence degeneration follows their destruction. We have voluntary and involuntary muscle structure, medullated and nonmedullated nerves, large vascular systems and the finest of capillary networks. We have, in the supporting structures of the globe, something akin to a joint—anatomically—a ball and socket joint of extraordinary degrees of mobility. We have, in the transparent lens system of the eye, modifications and differentiations of epithelial and connective tissue of the highest degree.

And we have all of these, including the circulating blood, under our eye. Thus we see on the eye side the effects of invasion from the nose, throat and oral side.

Parenthetically, I want to make a plea for a better understanding of the field of endeavor of stomatologists by our medical confrères.

Of late years, stomatologists have been taken to task for their medical shortcomings; but it would seem that our profession is far more to be reprehended for its dental shortcomings—for its meager knowledge and experience in diagnosing disease of the tooth and jaw, which should be its job. So far, the profession has for some reason looked on "teeth"[1] diagnosis as something apart.

THE LITERATURE

In my literary research, it has been interesting to note the trend during the years since Hunter revived the relationship of teeth to systemic disease, and to observe, during the rise of interest, how much of the literature consists of reports of cures associated with surgical removal of the foci. Obviously, these were being much overestimated at first, partly through overenthusiasm, and partly because the cure was not always due to such removal, since other treatment was often prescribed, such as rest and restoratives, and antirheumatic and physiotherapeutic measures. It is interesting again to note how the fall in interest is quite as much due to experience, since the present ebb of enthusiasm results largely from failure always to cure surgically. This, one must observe, has most unduly influenced the attitude of many of the most astute oral surgeons. The result has been to encourage general dental practitioners to revert to the earlier teachings of saving teeth rather than life, of conserving appearance at the expense of health, so that it has become increasingly difficult to gain cooperation in the elimination of the foci, even when they threaten the sight.[2]

Regardless of the suffering or the apprehension of the patient, the mere raising of a doubt in regard to the outcome is sufficient to shy him away from the loss of a tooth. Refusal is very common, particularly when doubt is raised by the fundamentally conservative dentist. But it seems certain that if medical men can evolve more positive methods of orienting these primary lesions, we shall have the cooperation of dentists in their removal. I have enough faith in the judgment of dentists to believe that they will follow any lead offering relief to their patients. I have faith in the common sense of the patients if there is harmony of advice between medical and dental confrères.

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* Read before the Section on Stomatology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] There seems to be much confusion in nomenclature and some difficulty in finding a term that will cover comprehensively all the areas involved in these infections. To speak of them as apical abscesses is hardly correct because many—often the most virulent—have no leukocytes and hence are without pus. Other areas also in and around the teeth may be involved and cause secondary infection. Wishing, if possible, to cover in one term the chronically infected areas, absorption from which, both bacterial and toxic, may produce systemic disease or secondary foci, and to limit my consideration to these types of secondary damage, I shall speak of them as "teeth" infection; this in the sense that they depend primarily on the presence of teeth at some time.

[2] Failure to cure is not valid argument against the theory, particularly when teeth and eyes are concerned, because so often the attempt is made too late, as we shall later see. Once delicate retinal structures are injured, they do not come back.

Thus it may seem that, always observing disorders of unknown causation, I found something illuminating in the revived association of teeth and systemic invasion.

So we have before us two major problems which, after all, are the problems of medicine itself; viz., the attack and the defense—the invaders and the invaded.

THE INVADERS

It is a general observation, both from an extensive study of the literature and from clinical experience, that the most frequent order of etiologic probability in focal infections wherein bacteria are carried by the blood stream is: first, teeth; second, tonsils; third, intestines (the original three T's, Dr. Deaver asserting that the third "T" is the appendix); fourth, the sinuses, and, lastly, genito-urinary diseases.[3]

It is worthy of note that there has been, of late years, a very marked reduction in sinus and genito-urinary infections, due to improved methods of cure in acute and early stages; that gastro-intestinal foci are more expeditiously handled than formerly, and that treatment of one of the remaining T's, viz., the tonsils, shows improvement almost to the vanishing point.

The problem of the remaining "T," that with which stomatologists are concerned, is different. It is not easy for the patient, nor, indeed, for the 95 per cent. of the dental profession that is still under the spell of the early dental teachings, to let go of teeth. Teeth are both useful and ornamental and of immense value to digestion, though not, thanks to the wonderful dental inventions and technic, absolutely necessary.

Conclusions from Literary Research.—From even a casual survey of the literature, one is justified in several far reaching conclusions along general lines, to all of which one will doubtless subscribe without argument; viz., that:

1. The dangerous foci are usually painless.
2 The dangerous invading organisms are types of streptococci —perhaps man's greatest enemy.
3. Diagnosis cannot positively be made from roentgen-ray films alone; negative findings do not exclude lesions.
4. A so-called vital tooth may harbor a virulent infector, and thus be a dangerous focus.
5. When these foci act, the transmission is by the blood stream, in the sense that we are considering them
6 Some "teeth" become sterile by natural methods of healing, though it is not possible always to know when it occurs.
7. Teeth foci may arise by metastases from infections elsewhere in the body, and thus be themselves secondary foci.
8. Rosenow's original postulate of selective localization seems to have been justified, so far as it concerns bacteria.
9. Rosenow's reason for the determination of the site of a secondary focus, so far as it pertains to oxygen tension, is probably correct

DIAGNOSIS OF A PRIMARY TOOTH FOCUS

Knowing, then, that the attack may come from any tooth area, that the infecter is a streptococcus, that the film diagnosis is but one means of orienting it, that the bacteria or their toxic products are coming to us by the blood stream (though symptoms may reach us reflexly), and that the bacteria will grow and be destructive when they find favorable soil, or that the toxins will destroy when biochemical conditions favor, we have before us the problem of defense.

But before that, and as a part of the problem of attack, is the problem of determining, by methods other than those usually employed, whether indeed there is an active process in or around the teeth; in other words, the problem of diagnosis in a given case. In the presence of an eye symptom or a manifest lesion, what, if any, signs are there, apart from those open to observation, that might point the way?

Blood Signs.—A few years ago, my attention was called to the observation of Dr. Julius Toren that a blood cell which he called a specific type of lymphocyte demonstrable by a special type of stainability was associated with "teeth" infections—the chronic foci. This observation has not been seriously considered in otolaryngologic or in stomatologic literature, so far as I can find, nor, indeed, by hematologists, since it has been thought improbable that a specific cell could be thrown off by the submaxillary glands, as assumed by Toren. The cell noted by Toren was differentiated by Ehrlich in his original classification. All that Toren assumed was its association with these infections. It is described as a

> large lymphocyte, the outline of which is usually irregular in contour, the cytoplasm of which has not the robin's-egg blue of the normal large lymphocyte, but which has instead a peculiar grayish, grainy appearance. The nucleus is always irregular in contour and stained with a moderate degree of density. The nucleus is frequently cuboid or ovoid with one flattened side. The irregularity in shape of the nucleus does not correspond with the irregularity in shape of the cytoplasm; in other words, is not due to pressure of adjacent cells. . . . We have never found these leukocytes present in the blood of a patient who did not have oral infection, nor have we ever had a case of oral infection which did not have these leukocytes present.

There is much doubt about this cell's being a lymphocyte, since it has more the characteristics of the irritated monocyte described by Florence Sabin in her researches at Johns Hopkins. If this proves to be the case, it may well be evidence of a blood toxin, though not the result of submaxillary gland activity, and if so, it may be given these characteristics by any focus of infection that is generating such a toxin. Perhaps we shall find that these toxins develop more largely from teeth than from other foci because they result from anaerobic growth of streptococci in areas of low oxygen tension.

With the problems of medical diagnosis before me, I sought to ascertain whether I could diagnose "teeth" foci by the presence of these cells. I found them in the beginning, and continue to find them in more than 98 per cent. of all bloods examined in my laboratory. Therefore, if they are pathognomonic, then teeth infection exists in some form in practically all mouths. It is noteworthy that in cases giving negative blood findings, the mouths have appeared entirely free from infection by all tests. It is also noteworthy and confirmatory of the theory that probably not more than 2 per cent. of jaws are free from streptococcus invasion of some sort.

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[3] It would seem wise to think of damage from these primary infections as arising in two ways when blood borne one, by bacterial transmission; the other, by absorption and distribution of toxins Selective localization and the influence of soil, oxygen, etc, refer only to bacteria that are transplanted and develop elsewhere. Though doubtless some affinity obtains with the toxin absorption from the primary lesion, it is not in the sense of a bacterial transplant, since, while the latter may increase by growth, the former is limited by its quantity or by its degree of virulence. The defense against the bacterial spread is by the phagocytic cells of the blood, acting always with the aid of antibodies; while that against the toxin is by antitoxic or combining substances that are evolved in the immunizing process.

Dr. Toren now advises me that his findings agree with mine, and that he has come to regard 1.5 per cent. of these cells as within the normal, but that any percentage over that should be reduced by procedures directed toward the eradication of suspected infection and continued until the percentage has become within normal.

The differentiation of these cells and the staining and counting of blood cells generally is a procedure far too difficult for the ordinary laboratory technician or for the physician whose whole work is not along this line. It is a very special field, and requires much experience as well as an accurate, painstaking type of well trained mind. Toren's findings are given in Tables 1, 2 and 4, and my own series in Table 3.

I have found these cells in a surprisingly high percentage and in an unusual number of adolescents; and this finding, coming at the time of eruption of the third molars, is perhaps significant in view of the assertion by some that the delayed and impacted third molar is always infected.

In about one half of my cases, the ratios were changed by the elimination of foci in the way they should, to be in accord with this theory; in the others, it was not improved by dental surgery.

OTHER BLOOD FINDINGS

After a few months' study of these cells, however, and after careful differential counts of all suspected bloods, it became evident that other variations from normal were being found in these cases: first, low white blood counts (relative leukopenia), and second, quite generally, a relative lymphocytosis; i. e., a high proportion of lymphocytes with a lower ratio of what have been thought to be the phagocytes of the blood, the neutrophils. I was getting then a leukopenia with a lymphocytosis; that is to say, a polymorphopenia. As Table 3 shows, there was also a low degree of anemia present.[4]

TABLE 1.—*Average Findings by Toren in Entire Group of Four Hundred and Fifteen Cases of "Teeth" Infection*

Red Blood Cells	White Blood Cells	Polymorphonuclears	Per Cent.	Number	Average Normal	Mononuclears	Per Cent.	Number	Average Normal
4,756,000	6,854	Neutrophils........	58	3,975	5,000	[illegible]	—	—	75*
		Eosinophils........	2.2	151	200	[illegible]	28.3	1,953	1,500
		Basophils..........	0.5	34	30	Oral specific (?) †...........................	8.9	596	—
						Large mononuclears and transitionals...	2.1	145	395
			54.2	4,160	5,230		458.0	2,694	1,970

* We distinguish between large lymphocytes and the oral specific (?) cells.
† We record the cells described by Ehrlich and thought by Toren to be specific for oral infection as "oral specific" cells (oral specific [?]).

TABLE 2.—*Toren's Average Findings in Ninety-Eight Cases of Marked "Teeth" Infection*

Red Blood Cells	White Blood Cells	Polymorphonuclears	Per Cent.	Number	Average Normal	Mononuclears	Per Cent.	Number	Average Normal
4,362,000	6,109	Neutrophils........	51.5	3,146	5,000	[illegible]	—	.....	75
		Eosinophils........	2.0	122	200	[illegible]	29.4	1,906	1,500
		Basophils..........	0.7	43	30	[illegible]	14.2	758	—
						[illegible]	2.2	134	395
			54.2	3,311	5,230		45.8	2,798	1,970

TABLE 3.—*Average Findings from Author's Fifty Cases Selected from Whole Series (About Two Hundred and Fifty) Because of Known "Teeth" Infection*

Red Blood Cells	White Blood Cells	Polymorphonuclears	Per Cent.	Number	Average Normal	Mononuclears	Per Cent.	Number	Average Normal
4,530,000	5,770	Neutrophils........	56.5	3,260	5,000	[illegible]	30.8	1,778	1,575
		Eosinophils........	3.0	173	200				
		Basophils..........	0.5	28	30	[illegible]	5.8	335	—
						Large mononuclears and transitionals...	3.4	196	395
			60.0	3,461	5,230		40.0	2,309	1,970

TABLE 4.—*Changes in a Marked Case Reported by Toren*

Differential count of white blood cells: "B" = before treatment; "A" = after treatment

Red Blood Cells	White Blood Cells	Polymorphonuclears		Per Cent.	Number	Mononuclears		Per Cent.	Number
B-4,640,000	B-2,715	Neutrophils...........	"B"	50	1,358	Small lymphocytes......................	"B"	35.0	950
A-5,072,000	A-7,129		"A"	65	4,634		"A"	28.5	2,022
		Eosinophils...........	"B"	25	679	Oral specific...........................	"B"	9.5	258
			"A"	3	214		"A"	0.5	36
		Basophils..............	"B"	1	27	Large mononuclears and transionals...	"B"	1.5	41
			"A"	0	0		"A"	3.0	214

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[4] My research along this blood line was carried out without a close study of the literature. I thought I had something new, but on study of the literature for the purpose of this paper, I have been surprised and pleased to find that others, notably Deland, found lymphocytosis in nearly all of a hundred cases of "teeth" infection; and that Toren reports a similar picture. Coming in thus independently, my finding has more value than it otherwise might. On the other hand, Haden did not find such a picture in a study of 200 cases of apical abscesses, although my analysis of his previous reports on ocular lesions from dental disease does show mononuclear increase in nearly all his cases.

We have, then, some evidence of an association between these infections and the blood response; in other words, a possible evidence of "teeth" infection in the whole blood picture This, coupled with dental findings, should be a distinct aid to treatment, the object then being to establish a normal ratio by eliminating the areas supposed to be back of these specific cells and cell ratios, and not to give up until we do.

Clinical Signs.—In my summary, I shall show clinical findings, other than the cytologic, which are of added significance and value since they indicate that, in addition to the lowered red and white blood count, we have generally the following picture: a relatively low blood pressure (hypotension); a low normal pulse and basal metabolism, subnormal temperature, and a low percentage of blood calcium which is perhaps an index of the percentage of other minerals in the blood.

SUMMARY OF DIAGNOSTIC POINTS

We have, then, this clinical and blood picture:

Low normal or low red blood cell count
Low normal or low white blood cell count.
Relatively lowered polymorphonuclear count
Relatively high lymphocytes
The presence of oral specific cells (1.5 per cent and up)
Low thyroid activity (basal metabolism) [5]
Low pulse rate
Subnormal temperature
Low blood calcium content.

In fact, a low normal—depressed—state of the bacterial defense.

HOW DISEASED TEETH AFFECT THE EYES

In Table 5 I have grouped eye conditions that have been found to be associated with "teeth" infection.

Group 4 of Table 5 is of the greatest interest to me, and it is on this group that we are concentrating The degenerative types of eye lesions that I feel are the result of slow absorption of toxins have been the least studied and offer an interesting field The central (macular) lesions, coming as they do in the adolescent period, seem to me to be in some way related to the more serious mental conditions beginning in that period of life To me, the big problem of prevention lies here, since for every case of iritis, neuritis or keratitis, most cases of which have been proved to be of bacterial transplant, there are slowly progressing degenerative chorioretinal changes that bear the earmarks of long continued or very virulent toxin irritation on the fine vascular linings.

Internists have come to appreciate that many of the cardiovascular diseases of the middle and late years of life originate in severe diseases of early life, particularly scarlet fever, through the circulation then of virulent streptococcus toxins leading to microscopic changes in the delicate vessel walls which later become the sclerosed vessels of cardiac and kidney lesions and the whole chain of degeneration connected with them Certainly the continued blood passage of virulent toxins of streptococcus from teeth would do no less, and quite as certainly, to remove these foci after the changes have occurred would have only palliative value

In a very early paper on this subject, Lang expressed his belief that most of the cases of so-called senile degeneration of the choroid and retina would be found to be due not to the changes of years but to absorption of toxins from foci of infection. Hovde reports a case in which a patient with a central scotoma recovered after extraction of the tooth and, in connection with the subject of degeneration of the macula and central blindness, the observation of Nettleship that they might be due to "nutritional" disturbance is perhaps prophetic. Stock thinks that an autocytotoxin or cell solvent exists in the blood, and Stargardt conceives of the action as a specific one on these delicate cells—a biochemical selective affinity; while Oatman, noting that often these changes occur at puberty, speaks of it as perhaps a coincidence All of these theories combine in that to which I hold; namely, that the degeneration comes about as an endarteritis or a capillary phlebitis from toxic absorption.

TABLE 5—*Conditions Associated with "Teeth" Infection*

- 1 Reflexly (16 cases in author's series)
  - A Over sensory pathways
    - 1 Ocular pain
    - 2 Headache simulating that from strain
  - B Over motor pathways
    - 1 Weakness of accommodation
    - 2 Spasm of accommodation
    - 3 Spasm of lids
    - 4 Extra-ocular motor imbalance
  - C Over vasomotor pathways
    - 1 Through the lacrimal glands, tearing
    - 2 Through vasodilatation, congestions, styes, etc
- 2 By continuity of structure (no cases in author's series)
  - A Extra ocular infection, cellulitis or abscess
    - 1 Through paranasal sinuses
    - 2. Through the fascia
- 3 By bacterial transplant (through blood stream) (seven cases in this series)
  - A Cornea
    - 1 Direct
    - 2 *Secondarily from neuritis of facial nerves*
  - B Iris and ciliary body
  - C Anterior choroiditis
  - D Panophthalmitis
  - E Neuritis of optic nerve
  - F Neuritis of motor nerves
- 4 Through toxic absorption (twenty six cases in this series)
  - A. Disordered accommodation
  - B Disordered muscle balance
  - C Ocular vertigo
  - D Central chorioretinitis
  - E Senile chorioretinitis
  - F Angiopathic retinitis
    - 1 *Macular degeneration*
    - 2 Exudative
    - 3 Hemorrhagic
    - 4 Arteriosclerotic
  - G Retinal hyperesthesia
  - H Cataract (?)
  - I Glaucoma (?)
  - J Central types, mental confusional; cerebellar
- 5 Anaphylaxis (sensitization) (five cases in this series)

Quite in keeping with these findings and with that of observing neurologists, the associated mental diseases are also of the depressive type These subjects are apt to be blue and introspective. They have to push to go. They have low oxygen consumption and tend to form deposits in the unused muscle sheaths of the body, leading to infiltration, myositis, etc Favored sites for these deposits are between the shoulders, in the nape of the neck and in the inner thighs, with occasional infiltration in the back muscles.

I know of no better simile than the automobile, since the choked carbureter with too little air is like this "hypo" patient in producing waste products, and the resulting carbon deposits are not unlike those in the human machine. Too little air is burned in the mixture.

MANAGEMENT OF THESE CASES

The technical part of the defense side of the problem must be left for a future communication. However, as the result of the findings reported above, I have formulated certain methods of procedure in these cases after the diagnosis is confirmed, which may be of interest.

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[5] In 1923, cooperating with my laboratory associate, Anne Peterson, I tabulated some 2,500 basal metabolism tests in relation to pulse rate to determine whether the pulse rate was a diagnostic indication of thyroid function, and was able to show that a pulse rate below 68 in men or 72 in women is indicative of hypothyroidism Therefore, if a patient has a pulse rate below these low normals, one may safely prescribe thyroid gland substance in daily doses of one half grain (0.03 gm), increasing until the rate comes to normal If the pulse rate is high, the patient should be referred to an internist for proper test and therapy.

Every case has its threshold of safety. When I find that a patient is below the normal range of the picture, the physical findings of the internist being otherwise negative, I aim at once to ask the cooperation of the patient's dentist in the elimination of suspected foci in the order of their probability. Often we fail to get this, in which case we put it up to the patient.

But I do not favor any operative procedure in cases in which our findings are below the low normal.

If a white blood count under 4,000 is found, one should be on one's guard. If under 3,000, one should not operate. In either event the patient should be put on a green, leafy vegetable and fruit diet, and alkaline types of food, particularly the citrus fruits, should be given. If indicated, small doses of thyroid should be prescribed, for its detoxicating effect, as well as about a dram (4 gm.) of calcium lactate once a day, and ten or twelve general treatments of ultraviolet irradiation properly graduated. In my hands, no reconstructive defensive weapon has equaled ultraviolet irradiation in these cases. Grove and Vines reported remarkable increases in white blood cell count and in blood calcium, two indexes of resistance by the employment of calcium and parathyroid. I have never seen such improvement from these drugs alone; and although in the early cases I did use both these and ultraviolet rays, I later dropped the parathyroid, since there is no proof that it is absorbed when taken by mouth. I have also tried the calcium alone, only to find that the improvement did not persist. Now, however, with the calcium and ultraviolet rays combined, I both obtain and hold the increase, though I have never been able to push the white blood cell count very high. The ionizing power of ultraviolet rays on the minerals of the blood seems to stimulate the white blood cells to greater phagocytic activity. I have never failed to improve the clotting power by the use of ultraviolet irradiation, and, though I do not mention it in the summary, I have come to believe that the clotting time is an index to the condition of the patient and the degree of infection. I do all of the actinotherapy under control of the blood findings. In one case, it was not tolerated and had to be discontinued.

When one has succeeded in raising the threshold of safety, then the surgical procedures should be limited to one or two areas at a time. One will be surprised at the quickness of healing and will be amply repaid for thus limiting one's risks.

It must always be remembered, however, that it takes a much higher degree of immunity to raise the threshold when there is an area of infection anywhere, and it is difficult to cure such areas because of the low circulation in them; but, when the blood immunity is first raised and then the area drained, the improvement is remarkable.

Unfortunately, from the standpoint of the eyes, the patients come to us only after the damage has been done. As pointed out earlier in the paper, the retina being made up of brain cortical cells and containing the parent nuclei whose destruction means degeneration of the afferent fiber, there is seldom complete recovery, and often no change after operation. Therefore, if we are to do our whole duty, we must endeavor to remove these foci before the injury has been done.

PROBLEMS

If we can develop an early diagnosis by laboratory and clinical methods so as to get patients into the hands of dentists early, prevention will be made possible.

I am now undertaking the following researches:

1. A research to determine by experimental methods whether there are blood changes pathognomonic of infections of the type found in teeth.
2. A research to determine whether we can improve the bactericidal valence of the blood by:
   (*a*) Ultraviolet irradiation.
   (*b*) Vaccine inoculation employing the new control method of Wright.
   (*c*) The employment of toxin and antitoxin methods for testing and for developing immunity.

If the first research should prove successful, diagnosis could easily be established, after which the program of treatment could be charted. If the second proves successful, it is not vain to hope that not only the body may be protected from systemic invasion, but that the teeth may be saved, even after the pulps are destroyed. Thus, perhaps, the brilliant work of this generation of dentists shall not have been in vain.

This may be far off or it may be near. With all the workers in the untilled field of preventive medicine, who shall say?

1507 Hinman Avenue.

ABSTRACT OF DISCUSSION

Dr. Edward H. Hatton, Chicago: The crux of this paper lies in the method of laboratory diagnosis that is proposed. Can one diagnose chronic mouth infection by blood examinations? Sometime ago we made nearly 1,000 blood examinations of all persons who came to our clinic requiring full mouth roentgenograms, and we came to these conclusions, which have been verified by others: First, while it is true that in chronic infections of any type there is usually a relative lymphocytosis, this is only present in, perhaps, from 60 to 70 per cent. of the cases. Second, while leukopenia, or a reduced white cell count, is frequently found in chronic infections around the apexes of the teeth, it is not constant. In these counts, and in others that I have made in and out of hospitals, except in typhoid, none has been found below 5,000 white cells. Whether or not there is such a type of cell as is described by Toren is still a problem. As far as I know, Dr. Toren and Dr. Walter are the only two men who have identified this cell and can recognize it in blood smears. The diagnosis of chronic appendicitis and chronic salpingitis by blood smear examinations has been proposed because of similar changes in the differential count, but I know of no reason why lymph glands stimulated by infection in one part of the body should produce a typical cell; I know of no reason why the mesenteric glands, for example, should not produce this cell if the same sort of organism was found in the appendix as is found around the roots of the teeth, or in the lymph glands of the pelvic region. If this method of diagnosis is not reliable, then the contention of the author cannot be considered as proved.

Dr. Vilray P. Blair, St. Louis: This paper is too broad to be discussed with a criticism of one phase of it which probably not one of us is willing to accept. There are so many other things in the paper that are so absolutely true that I think they also should be at least noted in the discussion. I am a general surgeon, not a specialist. One interesting phase of the whole paper is that the specialist who first segregated himself from general practice to concentrate on a particular study is now reaching back over the whole field of medicine, not only to bring it to himself but to contribute to it. It is a constant interchange that must go on through the whole field. I cannot quote the source or the date, but 2,500 years ago some physician told one of the old kings, and left it on stone tablets, that the pain in his back, in his head and in his feet was due to his teeth and that he would not get well until his teeth were extracted.

Dr. Will Walter, Evanston, Ill.: I am really not contending anything; I am just recording what we have found. I do not think that the laboratory alone can prove anything. I know that unless one uses a very definite stain in a very particular way, he will not get the differentiation. I feel very much encouraged about there being something in this cell diagnosis, because of Dr. Sabin's research work in blood cytology at Johns Hopkins. Her studies in vital staining seem to have uncovered much, particularly as to the monocyte and the changes in its staining qualities in the presence of toxins. I do not think the Toren cell is a lymphocyte. It seems to be an irritated monocyte. If, therefore, monocytes are subject to irritation and do undergo changes in the presence of diseases, such changed cells would be pathognomonic of the disease producing the toxin, and if on removal of the teeth lesions the irritated cells disappear, that is clinical proof of their importance. But no experiment ever has been offered to prove or disprove this diagnostic point. What we are going to do is to see whether we can produce these cell changes, and if we can do so by experimental infection of the jaw, by the introduction of the toxin intravenously or by any other means, we shall then know that there is something to this method of diagnosis. We do know that we get this picture of a generally low condition in cases of chronic teeth infection, and it is quite within the realm of reason to believe that virulent toxins will cause changes in the blood cells. They circulate through the whole body and affect all the tissues of the body. I wish to be understood as not arguing for Dr. Toren or for anybody. I simply present what we have found. We hope to follow it out and thus to be of some service to our patients and to the profession.

STOOL EXAMINATION FOR PROTOZOA

IN ELEVEN HUNDRED INMATES OF A NEW YORK STATE INSTITUTION *

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Reports on the incidence of intestinal protozoa have appeared from time to time and from various parts of the country, but so far as we know there have not appeared recently any extensive studies from New York State.

Through the cooperation of the superintendent and his staff we were able to obtain stool specimens from 1,122 inmates of a New York State school for feebleminded women, and it is the result of these examinations that we report.

The great majority of the inmates were of the poorer class, all were below normal mentally, all were females, and all were confined in an institution where many of the inmates themselves are employed in the capacity of servants for the others. These people form a group in which a high rate of infestation of intestinal protozoa would not be considered remarkable. The fact that the rate is comparatively low, especially so far as the pathogenic protozoa are concerned, seemed to us to be of sufficient interest to report.

For one or more of the characteristics mentioned above, this group can scarcely be considered as typical of the residents of the state, but they have all lived in New York for a greater part of their lives, and most of them were born there and have never lived elsewhere.

Our figures represent the results of examinations of a single stool from each of the inmates. Practically all of the specimens were examined in the fresh state, and none were more than four hours old. The majority were examined in the summer months, while the specimens examined in the cooler weather were kept warm by artificial means.

The method of examination was as follows: A small bit of the feces was emulsified on the slide in a weak (from 1:1,000 to 1:10,000) solution of neutral red in 0.85 per cent. salt solution. The vegetative amebas and the living flagellates take up this dye, making their detection easy. Cysts do not take up the dye but are nevertheless readily seen. A second preparation was made, compound solution of iodin or one of the iodin-eosin mixtures of Kofoid[1] or Donaldson[2] being employed as a diluent; these preparations helped rule out bodies sometimes mistaken for cysts, and in some instances identification of the organisms was possible by this means alone; but the final test was the examination of film preparations fixed in Schaudinn's fluid and stained with iron hematoxylin. For the criteria used in the identification of the various organisms we consulted the publications of Dobell and O'Connor,[3] Boeck and Stiles,[4] and Kofoid.[1]

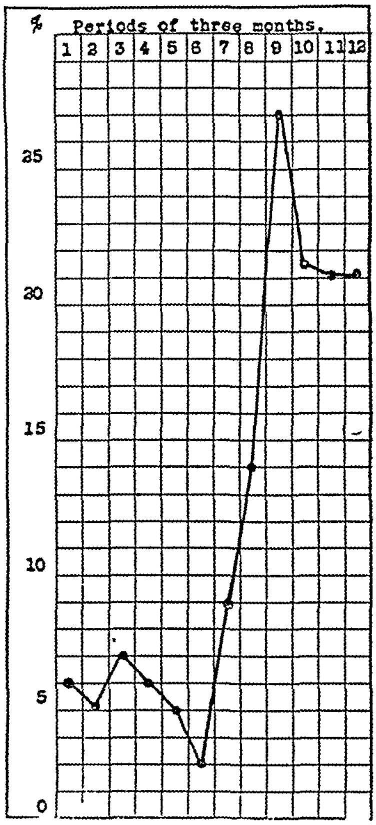

Chart 1.—Variations in incidence of intestinal protozoa obtained on the same class of patients as a result of more intensive study.

This is not a report of expert protozoologists, but as evidence of some degree of familiarity with the subject we offer a chart (Chart 1) which records our progress in the study of these organisms. The time covered by this chart is three years; this has been divided into periods of three months and, as indicated, the curve represents the percentage of positive cases in each period.[5] In the sixth period our interest was aroused to a point at which special study on the subject of intestinal protozoa was found necessary, from that time we have had a steady rise in the percentage of

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* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] Kofoid, C. A; Kornhauser, S. I., and Swezy, Olive: Criterions for Distinguishing the Endameba of Amebiasis from Other Organisms, Arch. Int. Med **24**: 35-50 (July) 1919.

[2] Donaldson, R.: An Easy and Rapid Method of Detecting Protozoal Cysts in Feces by Means of Wet-Stained Preparations, Lancet **1**: 571-573 (April 14) 1917.

[3] Dobell, Clifford; and O'Connor, F. W.: The Intestinal Protozoa of Man, London, John Bale Sons and Danielsson, 1921.

[4] Boeck, W. C., and Stiles, C. W.: Bull. 133, Hyg. Lab, 1923.

[5] Thomas, W. S.: Intestinal Protozoa in a Series of Three Hundred and Eighty-Two Patients, Clifton M. Bull. **8**: 27-30 (Oct.) 1924.

positive cases. A peak is reached in the ninth period, nine months after the beginning of our intensive study, after which the curve becomes flat. That this represents only the increased knowledge of the subject is evident when it is known that the class of patients studied remained the same during the entire time.

This work was done on patients entering our own hospital, and it was not until after the curve became flat that we began the study here reported.

Table 1 shows our findings in the institutional patients. Specimens from a total of 1,122 patients were examined. Of these, 499 showed one or more species of intestinal protozoa, giving a total incidence of 44.47 per cent. The number of positive cases and the percentage of the total is shown and also the multiple infestations with the organisms present. The multiple infestations are to be read as follows: *Endolimax nana* and *Chilomastix mesnili* occurred in the same specimen fifty-eight times, and *Endameba coli* and *Chilomastix mesnili* thirty-eight times, and in the case of the triple infestations *Endameba coli, Chilomastix mesnili* and *Endolimax nana* occurred in the same specimen fourteen times. There were 348 instances of infestation by a single organism, 126 in which two were present, twenty-four in which three were seen and one in which there were four species.

Table 1—*Findings in 1,122 Patients in a New York State Institution*

		Multiple Infestations																	
	Single	Double									Triple						Quadruple	Total	Per Cent.
Endameba coli	118		38	22	...		1	..	.	..	14	3	.	2	..		1	200	17 83
Endolimax nana	98	58		22	..				1		14		3	.	1	1	1	199	17 74
Endameba histolytica	8	.	.	..				1	.	1	.	.	..	..	1	1	...	12	1 07
Chilomastix mesnili	111	58	38		3	1				1	14	3	3	2	1	.	1	236	21 03
Trichomonas hominis			..	.		1	..		.			.	.	2	.	...	...	3	0 26
Giardia lamblia	13	.		.	3		1	1	1	.		3	3	..	...	1	1	27	2 40
Total	348	126									24						1	499	44 47

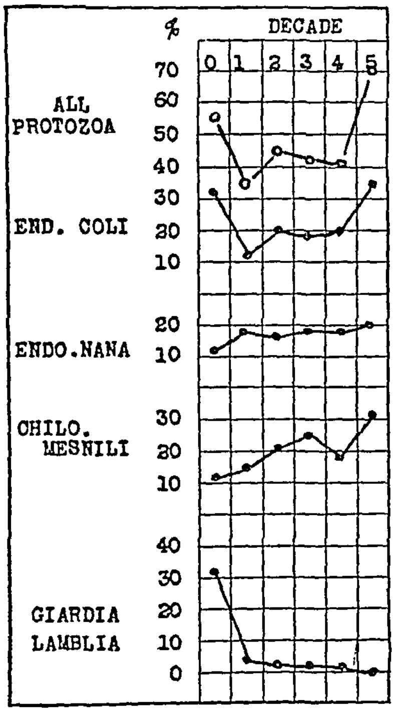

Chart 2—Influence of age on incidence of infestation

The chief points of interest in this table are the relatively high incidence of *Chilomastix mesnili* and the low figure for *Endameba histolytica.*

It is possible that we have a greater number of *Chilomastix mesnili* in this section of the country than any other, but it is more probable that one reason for the high figure is the fact that the stools were examined in the fresh state while the organisms were still motile and therefore more easily detected. Boeck and Stiles[4] quote Matthews and Smith[6] as reporting 23 per cent. infection with chilomastix in an asylum. Since, in infections with the chilomastix, greater numbers of the organism are seen than in almost any other intestinal protozoon infection, the chances of transfer would be greater, all other things being equal, and in an institution where personal contact is constant this transfer is readily accomplished.

Chilomastix mesnili is not considered pathogenic by the majority of observers, and the high rate of infestation here is possibly of academic interest only; but in considering *Endameba histolytica,* an organism generally recognized as pathogenic, the interest is more than an academic one.

In considering the low figure for *Endameba histolytica* obtained in a class of people in which one might expect a high figure, only two possibilities come to mind in the way of explanation: (1) that *Endameba histolytica* is present less often in the cases studied here than those reported from other localities or (2) that we overlooked a great many.

It is generally conceded that only one third of the cases of protozoon infestation are brought to light in a single examination. Assuming that this figure is correct, which we do not doubt, if we can apply the figure to the individual organism we would still have only 3 2 per cent. showing *Endameba histolytica,* a percentage considerably lower than those given by the majority of workers in this field. It is important to note that none of the persons having *Endameba histolytica* showed any signs of amebic infection either before or after the examination.

Table 2—*Average Age and Incidence of Infestation with Protozoa in the Various Houses of the Institution*

House	Number of Inmates	Average Age	Positive	Negative	Per Cent. Positive
A	86	26 16	47	39	54 6
B	138	28 57	59	79	42 7
C	147	39 27	62	85	42 4
D	72	27 47	36	36	50 0
F	70	29 98	43	27	60 1
G	88	31 03	46	42	52.2
H	88	30 97	45	43	51 1
I	85	32 01	33	52	38 8
Moss	44	28.5	20	24	45 5
Wilbur	46	18 9	21	25	45 7
Burnham	122	19 0	47	75	38 5
Hospital	74	24 6	14	60	19 0
Infirmary	46	32 4	23	23	50 0
	1,106*	28 37	496	610	44 8

* The discrepancy between this figure and the total of 1,122 patients is due to the lack of data as regards the age in some of the patients

We have made an attempt to analyze the foregoing figures in the light of data we had as to age, period

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6 Matthews, J R, and Smith, A M · The Spread and Incidence of Intestinal Protozoal Infections in the Population of Great Britain, IV, Asylum Patients, V, University and School Cadets, Ann Trop Med. **13**: 91 94 (May) 1919

of residence in the institution, the different dormitories, and the time of year examined.

A slightly higher percentage was found in the summer months than other times of the year, but it was inconsiderable. There is a rather wide variation in the different houses as shown in Table 2. Dormitory F showed the highest incidence (60 per cent.), and the hospital the lowest (19 per cent.). No satisfactory explanation for this variation was found. Among the possibilities suggested was that of the matrons and their attitude toward their charges, but on inquiry the authorities stated that the matron of Dormitory F was among the most efficient. Other possibilities considered and investigated gave no better results. The average age was scarcely expected to give any information, as young and old occupied all houses, and consultation of the table will show that the variation is not marked. In Table 3 the cases are grouped according to age; Chart 2 shows the result graphically *Endameba histolytica* and *Trichomonas hominis* are not included in the chart, since they comprise such a small number of the cases. It will be noted in the table, however, that all the cases of *Endameba histolytica* infestation occurred between the ages of 20 and 40. There is a slight but steady increase in the percentage of *Chilomastix mesnili* as the age increases; the *Endolimax nana* varies but little from the first to the sixth decade. There is a sharp drop in *Giardia* after the first decade, while *Endameba coli* parallels the total incidence.

The small number of cases examined in the first and last decades makes it unwise to draw conclusions.

In institutions, especially those in which the inmates are employed as help, cross infection is to be expected. To ascertain, if possible, some idea of the degree, we listed the inmates according to their term of residence and found a distinct rise in the incidence of infestation in the first year. Those confined for a year or less were then listed according to months, and it is seen that there is also a sharp rise in the first two months of residence, the curve flattening out at about the third month. The numbers and percentages are given in Table 4 and the curves in Chart 3. The curve in which the residence in years is plotted is based on a fair number, but in that based on months the number is so small that it is doubtful whether the conclusion can be drawn that all cross infection takes place within a few months Table 5 shows the findings of some of the observers in this country and abroad with our figures in the last row for comparison.

Table 3—*Influence of Age on Occurrence of Various Protozoa*

	Age of Patients											
	0 to 10		10 to 20		20 to 30		30 to 40		40 to 50		50 to 60	
	No	%	No	%	No	%	No	%	No	%	No	%
Endameba coli ..	5	31	23	12	75	20	61	17	30	19	3	33
Endolimax nana .	2	12.5	34	18	71	16	61	18	29	18	2	20
Endameba histolytica	0	0	1	0.53	5	1.3	4	1.2	2	1.27	0	0
Giardia lamblia .	5	31	6	3.7	11	3.0	4	1.1	1	0.6	0	0
Chilomastix mesnili	2	12.5	28	14.9	73	20	86	25.1	30	19.1	3	33
Trichomonas hominis	0	0	1	0.53	1	0.27	1	0.29	0	0	0	0
Total patients	16		188		365		334		157		10	
Positive .	9	56.2	68	36.1	170	46.5	153	44.7	68	43.3	7	70

Table 4—*Influence of Residence in Institution on Incidence of Protozoal Infestation*

Years	Negative	Positive	Total	Per Cent	Months	Negative	Positive	Total	Per Cent
0	78	41	119	34.4	0	12	3	15	20.0
1	100	88	118	45.7	1	7	5	12	41.6
2	36	33	69	47.8	2	8	9	17	52.8
3	38	27	65	41.6	3	8	7	15	46.6
4	36	29	65	44.7	4	11	8	19	42.0
5	30	26	56	46.5	5	7	6	13	46.1

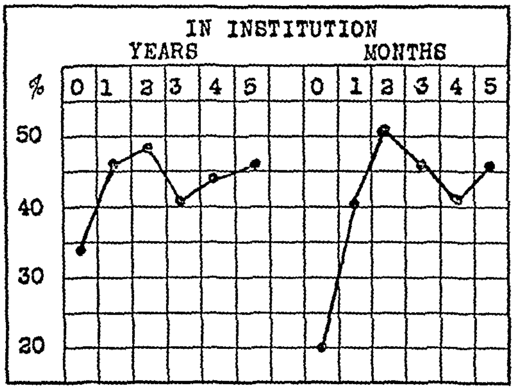

Chart 3—Influence of residence in the institution on the incidence of protozoal infestation

Table 5—*Observations of Other Workers for Comparison* *

Name	Reference	Number of Cases	E Histolytica	E Coli	E Nana	Chilomastix Mesnili	Trichomonas Hominis	Giardia Lamblia	Incidence
Kofoid, C A; Kornhauser, A I, and Plate, J T	J A M A **72**: 1721 (June 14) 1919	1,500	9.2	25.9	28.9	6.0	0.26	5.4	65
Kofoid, C A, and Swezy, Olive (Overseas troops)	New Orleans M & S J **73**: 4 (July) 1920	2,300	12.8	20.5	29.3	4.2	0.1	5.7	—
Kofoid, C A, and Swezy, Olive (Home troops)	New Orleans M & S J **73**: 4 (July) 1920	576	4.3	15.9	27.8	3.5	0.2	6.4	—
Lyon, M W, Jr . ..	J A M A **72**: 326 (Feb 1) 1919	163	6.1	1.4	—	—	1.8	1.2	56
Carter, H F, Matthews J R, Mac kinnon, Doris, and Smith, A M	Med Research Comm, London, Special Report Series, No 7, p 122, 1918	1,680	12.4	26.2	18.0	5.0	0.77	13.4	51
Carter, H F; Mackinnon, Doris, Matthews, J R, and Smith, A M	Ann Trop. Med **10**: 411 (Feb) 1917	910	10.2	25.4	—	2.6	0.12	18.6	44.2
Giffin, H Z .	J A M A. **61**: 675 (Aug 30) 1913	1,700	4.6	8.7	—	—	—	—	—
Sanford A H . .	J A M A **67**: 1903 (Dec 23) 1916	5,000	10.7	5.7	—	—	—	—	—
New York series . .		1,122	1.07	17.8	17.7	21.0	0.26	2.4	44.4

* The authors' figures appear in the last line

SUMMARY

In 1,122 inmates of a New York state institution, 44.47 per cent. showed intestinal protozoa on examination of a single stool specimen from each. There is evidence of cross infestation in the institution. The influence of age is not great except in the case of *Giardia lamblia,* in which the young persons are more often infested. *Chilomastix mesnili* was the organism most often found. *Endameba histolytica* was seen in only 1.07 per cent of those persons examined. Taking this low figure into consideration, together with the facts that we are dealing with a class of patients in which a high incidence might be expected, that the patients were all confined in an institution where cross infestation takes place and that none of the 1.07 per cent. with *Endameba histolytica* had at any time shown any evidence of amebic disease, we feel justified in believing that *Endameba histolytica* plays only an insignificant rôle in the production of disease in New York State.

ABSTRACT OF DISCUSSION

Dr. Charles G. Lucas, Louisville: The incidence of only 1 per cent. of *Endameba histolytica* is very small. That can possibly be explained by the fact that only one examination was made. In our own work we examine a warm stool every day. Of course, in this particular instance the work was done in an institution for the feebleminded. I know of no other work in my part of the country that has been done under these circumstances. I was interested in the fact that Dr. Thomas found 2.4 per cent. *Giardia*. In my own work we found more *Endameba* than *Giardia*, and while I know that some men believe that *Giardia* is not pathogenic, still some of the worst cases of intestinal parasites, three at least, have been caused by *Giardia*. One man has been from the Atlantic to the Pacific in search of relief; he has had his teeth out, gallbladder and appendix removed, and, only lately, at the Johns Hopkins Hospital, where he was given mercurochrome through a tube, did he get any relief. During the time he was having the greatest trouble, he received the greatest relief from the use of the duodenal tube each night. The gross infections, I think, can be explained by the mental condition of the patient. I can well remember the first time we ever found *Edameba* in the stools. Dr. Smithies found the organisms. The patient had been in the habit of going down the Mississippi. Stimulated by the protozoal infections in the Middle West, we have been in the habit of examining warm stools and have been very much surprised at the number of stools we have found infected.

Dr. Sidney K. Simon, New Orleans: One phase of Dr. Thomas' paper that was interesting to me might bear some emphasis. This is entirely apart from the low incidence of *Endameba histolytica* in the New York institution, which, of course, was much lower than the general figures averaged by Kofoid's examination of the stools during the war. Kofoid found 12 per cent. infection in the recruits going overseas. The phase that I speak of, however, is that of this 1 per cent. of *Endameba histolytica* infections, none showed any effects of disease. A fact that is very commonly overlooked is the comparative frequency of *Endameba histolytica* without clinical evidence. This represents more than mere statistical evidence, and is a distinctly interesting clinical phase. Surgeons have recognized for a long time that many patients with abscess of the liver have a liver lesion without ever having had any intestinal symptoms, and in studying *Endameba histolytica* in the routine examination of stools, I have found a rather high percentage of *Endameba* infection, almost 5 per cent., without any clinical evidence of disease. These patients, nevertheless, are potentially diseased and are to be looked on as carriers of the disease, because, after all, the disease is carried by the cyst. I have found that in almost every instance in the so-called symptomless *Endameba histolytica* patients there is some deviation from the normal condition. They are generally run down, with a secondary degree of anemia, digestive disturbance, etc. They bear some imprint of this intestinal infection which is of such low virulence as not to produce clinical symptoms, but which is sufficient to influence the normal health condition. Many persons with *Endameba histolytica* infection who are not definitely sick and who improve when their general health condition is relieved, are carrying the infection most extensively.

Dr. Anthony Bassler, New York: There will be reported at the meeting this year some of Dr. Wood's work in connection with carcinoma production in the rat, and I think all will agree when they become cognizant with his laboratory work that the incidence of production of rat carcinoma is dependent on two things: First, that there is a definite hereditary strain, which requires the reproduction of rats to be carried through generations of rat-bearing carcinoma with their intermating; and second, that with the implantation of carcinoma in the rat, its take is largely dependent on the simultaneous inoculation of some intestinal parasite accompanying the implantation. At the present time, the tinea is used. No doubt other parasites would serve just as well because it is handy. Thus there is a rather strong suggestion that perhaps the question of carcinoma in the human may in some way be bound up in the frequency with which parasites are found in the bowel of the human being.

Dr. W. S. Thomas, Clifton Springs, N. Y.: We realize that our figures are very low indeed. We were surprised to find them so low. Most of the figures in the comparative table shown are from single examinations.

FURTHER STUDIES ON THE DICK TEST *

P. S. ROSEN, M.D.; P. B. SADOWSKI, M.D.
AND
L. A. KOROBICINA
MOSCOW, RUSSIA

We have made 2,487 Dick reactions on healthy persons among the inhabitants of the small manufacturing town Jarcewo, in the Smolensky district.

The reaction was made with the toxin of the Metchnikoff Institute, purified after the Hentoon process. The strength of the toxin was 1:500. We have obtained 867 positive and combined reactions, or 34.9 per cent., a lower percentage than that obtained in Moscow. This difference may be explained by the fact that there was an epidemic of scarlet fever at Jarcewo.

Out of twenty-nine old persons, most of whom were over 60, there was only one with a slight positive reaction.

It is noteworthy that during the epidemic of scarlet fever in the Farröer islands at Tjornshown, there were ill with the disease only 2.9 per cent. of the inhabitants between the ages of 40 and 60 years, and only 1.8 per cent. of the persons over 60.

Of 179 persons who declared they had previously been ill with scarlet fever, 63, or 35.2 per cent. showed a positive or combined reaction. Of course, not all of these declarations can be relied on.

We tried also to learn the influence of living conditions on the results of the Dick reaction. Although the data were not sufficiently numerous to enable us to make definite deductions, we did ascertain that very young children in families with a higher standard of living had a retarded spontaneous immunization and gave a higher percentage of positive reactions.

At the age of 6 and over, this difference was found to disappear; a condition that probably may be explained by the fact that children at this age begin to attend school, where all groups are subjected to equal conditions.

As soon as children reach the age of adolescence, if their living conditions are good, they show a quick decrease of percentage of the positive reaction, while others who are deprived of good living conditions show only a slight decrease from 32.6 to 30 per cent. Apparently persons subjected to bad living conditions are more liable to get sick.

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* From the epidemiologic section of the Metchnikoff Institute for Infectious Diseases, Prof. S. B. Korshun, director.

Among 867 children with positive and combined Dick reaction, there have been only seven cases of scarlet fever; so far all of them showed a negative Dick reaction after their recovery.

Among 1,620 children with negative and pseudonegative reactions, there has been no case of scarlet fever.

PULMONARY IMMUNIZATION

ITS BEARING ON THE ORIGIN OF ANTIBODIES

W. H. MANWARING, M.D.
Professor of Bacteriology and Experimental Pathology, Stanford University School of Medicine
FRANCIS I. O'NEILL, A.B.
KENNETH W. THOMPSON
AND
LEONARD G. DOBSON
STANFORD UNIVERSITY, CALIF.

Contrasted with our wealth of knowledge concerning changes in blood plasma and in tissue lymph during immunization, the almost total lack of knowledge concerning possible immunologic adaptations in fixed tissues is a striking fact. Nevertheless, there is reason to believe that immunologic adaptation of fixed tissues plays an important rôle in bodily resistance, the dominant rôle in the immunity against certain infectious diseases.[1] Adequate knowledge of fixed tissue changes in immunity may in time give therapeutic methods as valuable as the methods that have thus far resulted from serum study.

Practically the only physiologic studies so far made of immune tissues are a few tests of the reactions of isolated smooth muscle and isolated lungs of immune guinea-pigs. Perfused free from circulating antibodies, these tissues are apparently identical, physiologically, with anaphylactic tissues.[2] This has led to the tentative generalization that bodily adaptations in immunity probably consist of the development of an underlying fixed tissue hypersensitiveness, masked or protected by circulating antibodies. In attempting physiologic analyses of canine immune tissues, we have obtained results not in accord with this conception. This difference is well illustrated by perfusion tests with isolated canine lungs.

ISOLATED ANAPHYLACTIC LUNGS

If the lungs of actively [3] or passively [4] sensitized dogs are washed free from contained blood by a preliminary perfusion of Locke's solution and are then perfused with Locke's solution containing a small amount of specific foreign protein, the following anaphylactic reactions are observed: (*a*) a 75 per cent. reduction in the rate of perfusion flow, the reaction becoming maximal by the end of three minutes; (*b*) marked explosive pulmonary edema, with the escape of large amounts of perfusion fluid from the trachea, and (*c*) prompt and complete pulmonary fixation, with no collapse of the lungs on releasing the tracheal clamp.

These reactions are indexes of the anaphylactic potentiality of hypersensitive lungs, comparable with the anaphylactic potentiality of smooth muscle as revealed by the Dale technic.

ISOLATED IMMUNE LUNGS

If the lungs of immune dogs are similarly washed free from circulating antibodies and are then perfused with Locke's solution containing a primarily nontoxic specific foreign protein, there is a complete absence of anaphylactic reactions. The perfusion rate remains constant till the end of the test (ten minutes); there is no suggestion of edema, and the lungs collapse promptly and completely when the tracheal clamp is released. Within the limits of the experimental error, these lungs give reactions identical with those of normal canine lungs. There is no difference observed between actively and passively immunized lungs. Tests with primarily toxic foreign proteins have not yet been made.

CONCLUSIONS

These tests give a conception of immunologic adaptations of fixed tissues not in accord with current views. They indicate the removal or the masking of the preliminary fixed tissue hypersensitiveness, the development of fixed tissue resistances that in themselves would fully account for immunity, unassisted by circulating antibodies.

As the lungs of passively and of actively immunized dogs are apparently identical in these tests, the tests give no evidence that any tissue represented in the lungs acquires properties during active immunization that cannot be accounted for by the local absorption or fixation of circulating antibodies. The experiments, therefore, give no support to the current hypothesis that the main or sole site of antibody formation is in the reticulo-endothelial system.[5] They do not, however, rule out the possibility of antibody formation by this system.

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[1] Manwaring, W H, and Bronfenbrenner, J Intraperitoneal Lysis of Tubercle Bacilli, J Exper Med **18**: 601, 1913

[2] Manwaring, W H, and Kusama, Y Analysis of Anaphylactic and Immune Reactions by Means of the Isolated Guinea Pig Lungs, J. Immunol **2**: 157 (Feb) 1917

[3] Manwaring, W H, Chilcote, R C, and Hosepian, V M Capillary Permeability in Anaphylaxis J. A M A **80**: 303 (Feb 3) 1923

[4] Manwaring, W H, Hosepian, V M, and Enright, J R Passive Pulmonary Sensitization, J A M A **82**: 1104 (April 5) 1924

[5] Gay, F P, and Clark, A R The Reticulo-Endothelial System in Relation to Antibody Formation, Proc Soc. Exper Biol & Med **22**: 1, 1924

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

NEUTRAL ACRIFLAVINE-ABBOTT (See New and Nonofficial Remedies, 1925, p 134).

The following dosage form has been accepted:

Neutral Acriflavine Jelly 1 1,000 Abbott Neutral acriflavine Abbott, 0 1 part, dissolved in karaya gum jelly, containing sufficient sodium hydroxide so that the finished product has a p_H of from 8 5, to make 100 parts

Who Shall Treat the Sick?—Concerning the practice of medicine, it is maintained by some that an individual's disease is his own concern, and that he has a perfect right to employ any one, trained or otherwise, to treat him. There is no doubt that it is a dangerous fraud for an individual to represent himself as qualified to treat disease and care for the sick by claiming the possession of knowledge and experience in treating disease which he does not possess. This means that no individual has a right to commit a fraud It ought to be the duty of the state to prevent the perpetration of dangerous frauds, especially when they concern, not merely the individual who is defrauded, but other members of the community. —Waring, H. J, Osteopathy, Chiropractic and Medicine, *Brit M. J* **2**:682 (Oct. 17) 1925.

this low figure into consideration, together with the facts that we are dealing with a class of patients in which a high incidence might be expected, that the patients were all confined in an institution where cross infestation takes place and that none of the 1.07 per cent. with *Endameba histolytica* had at any time shown any evidence of amebic disease, we feel justified in believing that *Endameba histolytica* plays only an insignificant rôle in the production of disease in New York State.

ABSTRACT OF DISCUSSION

Dr. Charles G. Lucas, Louisville: The incidence of only 1 per cent. of *Endameba histolytica* is very small. That can possibly be explained by the fact that only one examination was made. In our own work we examine a warm stool every day. Of course, in this particular instance the work was done in an institution for the feebleminded. I know of no other work in my part of the country that has been done under these circumstances. I was interested in the fact that Dr. Thomas found 2.4 per cent. *Giardia.* In my own work we found more *Endameba* than *Giardia,* and while I know that some men believe that *Giardia* is not pathogenic, still some of the worst cases of intestinal parasites, three at least, have been caused by *Giardia.* One man has been from the Atlantic to the Pacific in search of relief; he has had his teeth out, gallbladder and appendix removed, and, only lately, at the Johns Hopkins Hospital, where he was given mercurochrome through a tube, did he get any relief. During the time he was having the greatest trouble, he received the greatest relief from the use of the duodenal tube each night. The gross infections, I think, can be explained by the mental condition of the patient. I can well remember the first time we ever found *Edameba* in the stools. Dr. Smithies found the organisms. The patient had been in the habit of going down the Mississippi. Stimulated by the protozoal infections in the Middle West, we have been in the habit of examining warm stools and have been very much surprised at the number of stools we have found infected.

Dr. Sidney K. Simon, New Orleans: One phase of Dr. Thomas' paper that was interesting to me might bear some emphasis. This is entirely apart from the low incidence of *Endameba histolytica* in the New York institution, which, of course, was much lower than the general figures averaged by Kofoid's examination of the stools during the war. Kofoid found 12 per cent. infection in the recruits going overseas. The phase that I speak of, however, is that of this 1 per cent. of *Endameba histolytica* infections, none showed any effects of disease. A fact that is very commonly overlooked is the comparative frequency of *Endameba histolytica* without clinical evidence. This represents more than mere statistical evidence, and is a distinctly interesting clinical phase. Surgeons have recognized for a long time that many patients with abscess of the liver have a liver lesion without ever having had any intestinal symptoms, and in studying *Endameba histolytica* in the routine examination of stools, I have found a rather high percentage of *Endameba* infection, almost 5 per cent., without any clinical evidence of disease. These patients, nevertheless, are potentially diseased and are to be looked on as carriers of the disease, because, after all, the disease is carried by the cyst. I have found that in almost every instance in the so-called symptomless *Endameba histolytica* patients there is some deviation from the normal condition. They are generally run down, with a secondary degree of anemia, digestive disturbance, etc. They bear some imprint of this intestinal infection which is of such low virulence as not to produce clinical symptoms, but which is sufficient to influence the normal health condition. Many persons with *Endameba histolytica* infection who are not definitely sick and who improve when their general health condition is relieved, are carrying the infection most extensively.

Dr. Anthony Bassler, New York: There will be reported at the meeting this year some of Dr. Wood's work in connection with carcinoma production in the rat, and I think all will agree when they become cognizant with his laboratory work that the incidence of production of rat carcinoma is dependent on two things: First, that there is a definite hereditary strain, which requires the reproduction of rats to be carried through generations of rat-bearing carcinoma with their intermating; and second, that with the implantation of carcinoma in the rat, its take is largely dependent on the simultaneous inoculation of some intestinal parasite accompanying the implantation. At the present time, the tinea is used. No doubt other parasites would serve just as well because it is handy. Thus there is a rather strong suggestion that perhaps the question of carcinoma in the human may in some way be bound up in the frequency with which parasites are found in the bowel of the human being.

Dr. W. S. Thomas, Clifton Springs, N. Y.: We realize that our figures are very low indeed. We were surprised to find them so low. Most of the figures in the comparative table shown are from single examinations.

FURTHER STUDIES ON THE DICK TEST *

P. S. ROSEN, M.D.; P. B. SADOWSKI, M.D.
AND
L. A. KOROBICINA
MOSCOW, RUSSIA

We have made 2,487 Dick reactions on healthy persons among the inhabitants of the small manufacturing town Jarcewo, in the Smolensky district.

The reaction was made with the toxin of the Metchnikoff Institute, purified after the Hentoon process. The strength of the toxin was 1:500. We have obtained 867 positive and combined reactions, or 34.9 per cent., a lower percentage than that obtained in Moscow. This difference may be explained by the fact that there was an epidemic of scarlet fever at Jarcewo.

Out of twenty-nine old persons, most of whom were over 60, there was only one with a slight positive reaction.

It is noteworthy that during the epidemic of scarlet fever in the Farröer islands at Tjornshown, there were ill with the disease only 2.9 per cent. of the inhabitants between the ages of 40 and 60 years, and only 1.8 per cent. of the persons over 60.

Of 179 persons who declared they had previously been ill with scarlet fever, 63, or 35.2 per cent. showed a positive or combined reaction. Of course, not all of these declarations can be relied on.

We tried also to learn the influence of living conditions on the results of the Dick reaction. Although the data were not sufficiently numerous to enable us to make definite deductions, we did ascertain that very young children in families with a higher standard of living had a retarded spontaneous immunization and gave a higher percentage of positive reactions.

At the age of 6 and over, this difference was found to disappear; a condition that probably may be explained by the fact that children at this age begin to attend school, where all groups are subjected to equal conditions.

As soon as children reach the age of adolescence, if their living conditions are good, they show a quick decrease of percentage of the positive reaction, while others who are deprived of good living conditions show only a slight decrease from 32.6 to 30 per cent. Apparently persons subjected to bad living conditions are more liable to get sick.

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* From the epidemiologic section of the Metchnikoff Institute for Infectious Diseases, Prof. S. B. Korshun, director.

Among 867 children with positive and combined Dick reaction, there have been only seven cases of scarlet fever; so far all of them showed a negative Dick reaction after their recovery.

Among 1,620 children with negative and pseudonegative reactions, there has been no case of scarlet fever.

PULMONARY IMMUNIZATION

ITS BEARING ON THE ORIGIN OF ANTIBODIES

W. H. MANWARING, M.D.
Professor of Bacteriology and Experimental Pathology, Stanford University School of Medicine
FRANCIS I. O'NEILL, A.B.
KENNETH W. THOMPSON
AND
LEONARD G. DOBSON
STANFORD UNIVERSITY, CALIF.

Contrasted with our wealth of knowledge concerning changes in blood plasma and in tissue lymph during immunization, the almost total lack of knowledge concerning possible immunologic adaptations in fixed tissues is a striking fact. Nevertheless, there is reason to believe that immunologic adaptation of fixed tissues plays an important rôle in bodily resistance, the dominant rôle in the immunity against certain infectious dissesases.[1] Adequate knowledge of fixed tissue changes in immunity may in time give therapeutic methods as valuable as the methods that have thus far resulted from serum study.

Practically the only physiologic studies so far made of immune tissues are a few tests of the reactions of isolated smooth muscle and isolated lungs of immune guinea-pigs. Perfused free from circulating antibodies, these tissues are apparently identical, physiologically, with anaphylactic tissues.[2] This has led to the tentative generalization that bodily adaptations in immunity probably consist of the development of an underlying fixed tissue hypersensitiveness, masked or protected by circulating antibodies. In attempting physiologic analyses of canine immune tissues, we have obtained results not in accord with this conception. This difference is well illustrated by perfusion tests with isolated canine lungs.

ISOLATED ANAPHYLACTIC LUNGS

If the lungs of actively[3] or passively[4] sensitized dogs are washed free from contained blood by a preliminary perfusion of Locke's solution and are then perfused with Locke's solution containing a small amount of specific foreign protein, the following anaphylactic reactions are observed: (*a*) a 75 per cent. reduction in the rate of perfusion flow, the reaction becoming maximal by the end of three minutes; (*b*) marked explosive pulmonary edema, with the escape of large amounts of perfusion fluid from the trachea, and (*c*) prompt and complete pulmonary fixation, with no collapse of the lungs on releasing the tracheal clamp.

These reactions are indexes of the anaphylactic potentiality of hypersensitive lungs, comparable with the anaphylactic potentiality of smooth muscle as revealed by the Dale technic.

ISOLATED IMMUNE LUNGS

If the lungs of immune dogs are similarly washed free from circulating antibodies and are then perfused with Locke's solution containing a primarily nontoxic specific foreign protein, there is a complete absence of anaphylactic reactions. The perfusion rate remains constant till the end of the test (ten minutes); there is no suggestion of edema, and the lungs collapse promptly and completely when the tracheal clamp is released. Within the limits of the experimental error, these lungs give reactions identical with those of normal canine lungs. There is no difference observed between actively and passively immunized lungs. Tests with primarily toxic foreign proteins have not yet been made.

CONCLUSIONS

These tests give a conception of immunologic adaptations of fixed tissues not in accord with current views. They indicate the removal or the masking of the preliminary fixed tissue hypersensitiveness, the development of fixed tissue resistances that in themselves would fully account for immunity, unassisted by circulating antibodies.

As the lungs of passively and of actively immunized dogs are apparently identical in these tests, the tests give no evidence that any tissue represented in the lungs acquires properties during active immunization that cannot be accounted for by the local absorption or fixation of circulating antibodies. The experiments, therefore, give no support to the current hypothesis that the main or sole site of antibody formation is in the reticulo-endothelial system.[5] They do not, however, rule out the possibility of antibody formation by this system.

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[1] Manwaring, W. H., and Bronfenbrenner, J.: Intraperitoneal Lysis of Tubercle Bacilli, J. Exper. Med. **18**: 601, 1913.

[2] Manwaring, W. H., and Kusama, Y.: Analysis of Anaphylactic and Immune Reactions by Means of the Isolated Guinea-Pig Lungs, J. Immunol. **2**: 157 (Feb.) 1917.

[3] Manwaring, W. H.; Chilcote, R. C., and Hosepian, V. M.: Capillary Permeability in Anaphylaxis, J. A. M. A. **80**: 303 (Feb. 3) 1923.

[4] Manwaring, W. H.; Hosepian, V. M., and Enright, J. R.: Passive Pulmonary Sensitization, J. A. M. A. **82**: 1104 (April 5) 1924.

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New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

NEUTRAL ACRIFLAVINE-ABBOTT (See New and Nonofficial Remedies, 1925, p. 134).

The following dosage form has been accepted:

Neutral Acriflavine Jelly 1:1,000-Abbott: Neutral acriflavine-Abbott, 0.1 part, dissolved in karaya gum jelly, containing sufficient sodium hydroxide so that the finished product has a p_H of from 8.5, to make 100 parts.

Who Shall Treat the Sick?—Concerning the practice of medicine, it is maintained by some that an individual's disease is his own concern, and that he has a perfect right to employ any one, trained or otherwise, to treat him. There is no doubt that it is a dangerous fraud for an individual to represent himself as qualified to treat disease and care for the sick by claiming the possession of knowledge and experience in treating disease which he does not possess. This means that no individual has a right to commit a fraud. It ought to be the duty of the state to prevent the perpetration of dangerous frauds, especially when they concern, not merely the individual who is defrauded, but other members of the community. —Waring, H. J., Osteopathy, Chiropractic and Medicine, *Brit. M. J.* 2:682 (Oct. 17) 1925.

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SATURDAY, NOVEMBER 28, 1925

WHAT DO CANCER STATISTICS REVEAL?

Medical statistics, especially cancer statistics, are notoriously open to various interpretations. A lay statistician, to whom a recorded diagnosis means that death was undoubtedly the result of the disease to which the diagnosis attributes it, will draw conclusions different from the analysis made by a physician untrained in the methods of the statistician. The latter is likely to avoid pitfalls that trap the nonmedical statistician and to fall into errors that the statistician avoids. A still different result is likely to be reached by a pathologist studying the same figures. He, with his daily observation of the margin of errors in diagnosis, especially of cancer, is likely to discard many figures that would be accepted by both the statistician and the clinician, or give to them an entirely different interpretation. The German pathologist Lubarsch, after considering the statistics of the German hospitals for the years 1920 and 1921, as part of an investigation of the German Cancer Commission, concluded that the errors in diagnosis, even in this selected material, were so great that cancer statistics can have little value. Other pathologists, notably H. G. Wells,[1] have manifested equal skepticism.

Recently an extensive and unusually thorough analysis of the cancer mortality in the ten original registration states made by Schereschewsky[2] revealed the usual marked increase in the death rate from this disease during the period from 1900 to 1920. After making various allowances for the increased age curve and the increased precision and accuracy in the filling out of death returns, Schereschewsky concluded that there is an actual increase in the cancer mortality in persons over 40 years of age. An assorted lot of statisticians, clinicians and pathologists handling the same figures would probably reach varying conclusions. If there is such an actual increased tendency to a higher death rate from cancer, what is its significance? How much of it depends on decreased deaths from other causes in the upper age levels? How much on improved diagnosis? How much are any of the figures worth, anyway? Cerebral hemorrhage, diabetes, nephritis and heart disease show quite as marked an increase as cancer in the same age levels. Does this mean anything more than that all these diseases are being more readily recognized by the physician while not enjoying as great an improvement in death rate as some other diseases?

To add to the confusion, an analysis of European cancer statistics has led Peller[3] to the conclusion that the increased death rate from cancer is not real but only apparent. To avoid the recognized sources of error induced by improved registration and better diagnosis, he has used only the statistics during recent years of a few of the largest European cities. In Vienna, the number of cancer deaths is actually increasing only a little, but he finds there is such a marked decrease in deaths from other causes that the ratio of cancer deaths to other deaths shows a decided increase. Indeed, when the population of cancer age only is considered, the cancer death rate in Vienna in the period from 1919 to 1923 is actually lower than it was in the period from 1901 to 1905, and the same proportion is apparent for Paris. In London, since 1900, there has been an increased frequency of cancer only in the most advanced age periods; when the postwar period is compared with the prewar period there is little difference, cancer mortality being somewhat higher in old men, but slightly lower in women of all ages. Peller concludes that "the cancer mortality in some of the large cities of Europe gives no grounds for the often expressed opinion that cancer is in a general state of increase."

The figures for the cities of the United States are also considered to some extent, but they offer such wide variations, between Detroit with a cancer mortality rate of 64.4 and San Francisco with 152.6 in 1920, that they baffle analysis. They seem to suggest that there are marked differences in age distribution and in registration and medical efficiency in different parts of the country. It may not be undesirable to learn the impressions that a European physician holds concerning American medical conditions:

> American scientific medicine has shown in recent years a progress worthy of respect. In many fields of exact medical investigation, America is already leading. Likewise in the education of physicians, progress is discernible. We all know that not so long ago the level of the physicians who came over to us for instruction was not at all satisfactory. Even as America exhibits the greatest extremes in density of population and in cultural levels, so too the education of the medical students varies from school to school. This may in large measure explain the great variation in the cancer death rate in different cities. Corresponding to the extremely rapid development that is recognized in every respect in America, the earlier medical deficiencies will be quickly overcome, and what required many decades in Europe will there be attained

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[1] Wells, H. G.: Relation of Clinical to Necropsy Diagnosis in Cancer and Value of Existing Cancer Statistics, J. A. M. A. **80**: 737 (March 17) 1923.

[2] Schereschewsky, J. W.: Cancer Mortality in the Ten Original Registration States, J. A. M. A. **85**: 1175 (Oct. 17) 1925.

[3] Peller, Sigismund: Die Krebsfrequenz und die Frage der Krebszunahme, Ztschr. f. Krebsforsch. **22**: 316 (June 16) 1925.

> much more quickly. Because of this the cancer figures in America must quickly increase. It is also not strange that in many places the cancer figures have reached such a height that we must believe them probably incorrect.

The number of recorded deaths from cancer in men is increasing much more rapidly than in women, so that there is now little difference in the two sexes in the most developed communities. This change is usually attributed to the larger proportion of internal cancers in men. Cancer of the skin, especially, shows little or no increase; in England and Wales the rate for males over 35 in 1868 was 45.7, and in 1909 it was 43.5. Cancer of the uterus and the breast also increases less rapidly than the less readily diagnosed internal cancers. For example, in England and Wales the rate for women over 35 years of age for cancer of the uterus, ovaries and breast in 1888 was 117; in 1909 it was 127, and in 1919 it was 121. Although there is generally a great increase in cancer of the alimentary canal, this has affected the stomach less than the esophagus.

Peller believes that the failure to answer the problem of the incidence of cancer does not lie in fundamental defects in the statistical method but on the defective working base. Defective diagnoses may be made by physicians, the statistical bureaus lack scientific medically trained leaders familiar with the problems of pathology and medicine, and the medical world in general shows but little interest in statistical work. At present, statistics can more easily propound problems than solve them, says Peller. Certainly, he concludes, we lack today adequate data to decide absolutely whether civilization and culture constitute cancer-predisposing or merely cancer-revealing influences.

THE METABOLISM IN OBESITY

"There is no stranger phenomenon than the maintenance of a constant body weight under marked variation in bodily activity and food consumption."[1] In these words, a capable student of metabolism recently referred to the vexing problems of overnutrition and obesity, in which the large amount of public interest is in marked contrast to the small amount of scientific information. Du Bois has pointed out that there are many persons who maintain constant weights during decades without any conscious limitation or increase in their dietaries. There are many others in this civilized land who maintain a constant weight only by frequent use of weighing machines and careful observations of the tightness of the waist-bands of skirts or trousers. We must remember, however, he adds, that obesity is rarest in those savage tribes among whom bathroom scales are unknown and skirts and trousers are at a *minimum*. It may be that the "constitutionally" obese person and the healthy underweight represent extremes of the same metabolic problem.

Students of obesity have long conjectured that obesity may result from causes other than excessive food intake or diminished energy expenditure. It has been assumed, for example, that the metabolism proceeds differently in those exhibiting the obesity "diathesis"—that they do not transform the nutrients in the accepted normal way. From this standpoint, obesity would be looked on as an anomaly or an abnormality of metabolism. So far as the basal metabolism is concerned, this conjecture does not apply. Sufficient actual determinations have been made on obese persons to furnish conclusive proof of the normality of this feature. Alterations in the basal exchange of matter and energy will not explain excessive overweight.[2]

Whether the metabolism of plethora, in contrast with the basal exchange, is altered has been debated. Some investigators believe that in endogenous obesity the organism works with abnormal economy, showing a much lower specific dynamic action than normal. Wang, Strouse and Saunders[3] asserted that protein shows a slight specific dynamic action in obese persons. Thin persons, on the contrary, show a high specific dynamic action of protein. Normal subjects follow much the same course as thin persons, but to a less degree. Normal subjects have the most marked specific dynamic action of carbohydrate. Although obese persons do not react in a uniform manner to carbohydrate intake, the average indicates a lessened specific dynamic action of carbohydrate. In their latest studies from the Nelson Morris Memorial Institute for Medical Research in Chicago, these clinicians[4] allege that after ingestion of protein, obese persons have a tendency to derive their energy from carbohydrate, whereas thin and normal persons use less carbohydrate than during starvation. Calories derived from fat decrease in the obese after the meal, but show little change in thin and normal persons. The two latter groups, however, show a decided rise in calories derived from protein after the meal, but the protein consumption is little affected in the obese. All of Strouse's subjects derived more energy from carbohydrate after the ingestion of a high carbohydrate meal, and less from fat. Calories derived from protein after this meal varied little, however, in any group from the starvation figures. After a high fat meal, all groups showed an increase in energy derived from fat. The obese continued to use carbohydrate in greater amounts than the two other groups. The protein consumption showed very little change, especially in obese and in normal persons. The fact that most of the obese persons studied showed a decided rise in calories derived from carbohydrate and a decrease in calories derived from fat after a high protein meal, and that the thin and normal subjects, on the other hand, utilized protein and fat as their chief sources of energy, is rather suggestive to the Chicago experimenters of a possible reason for obesity and thinness. As they express it, the obese conserve the body fat and thus accumulate more, whereas normal and thin persons use up their food fat instead of storing it.

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[1] Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, Lea and Febiger, 1924, Chapter X.

[2] Strouse, Solomon; Wang, C. C., and Dye, M.: Studies on the Metabolism of Obesity, II, Basal Metabolism, Arch. Int. Med. **34**:275 (Sept.) 1924.

[3] Wang, C. C.; Strouse, Solomon; and Saunders, A. D.: Studies on the Metabolism of Obesity, III, The Specific Dynamic Action of Food, Arch Int. Med. **34**:573 (Oct.) 1924.

[4] Wang, C. C.; Strouse, Solomon; and Saunders, A. D.: The Metabolism of Obesity, IV, The Distribution of Energy Production After Food, Arch Int Med **36**:397 (Sept.) 1925.

TEMPERATURE AND BASAL METABOLISM

An abundance of evidence obtained through the accurate procedures of clinical calorimetry indicates that an increase in body temperature over the normal produces an increase in metabolism. Data derived from the study of fevers show that the average rise in heat production is about 13 per cent. for each degree Centigrade (7.2 per cent. for each degree Fahrenheit).[1] This is in harmony with the well known fact that chemical reactions are accelerated by increased temperatures of the medium in which they take place. In the instances of febrile disease already referred to, it is conceivable that chemical products such as bacterial toxins or derivatives of abnormal cellular reactions may be the stimuli immediately responsible for the acceleration of metabolism, so that the latter is merely an incidental accompaniment of the temperature changes rather than a more direct result of them.

The effects of high temperatures in the external environment of the body have not been so clearly ascertained. They are naturally modified by the ability of the body to adjust itself to a wide range in temperatures. There are, however, limitations to this capacity, and they depend in turn not alone on the external temperature per se, but also on the factors of relative humidity and air movement; in fact, the latter may be of predominating importance. Consequently, investigators at the Bureau of Mines[2] have developed the conception of what they term the "effective temperature index," which attempts to evaluate the influence of the three physical air factors represented by dry bulb temperature, wet bulb temperature and air velocity, and to express them by a single numerical value. Attention is called by McConnell and Yagloglou[2] to the large temperature range of successful operation of the body thermostatic control, within which heat production and heat loss are accurately balanced. The most economical range is represented by ordinary atmospheric conditions. Above 85 degrees effective temperature, however, there is apparently a stress on the mechanism. The body makes strenuous efforts to resist rise in its temperature by promoting evaporation of perspiration from its surface, but the limit of adjustment fails above 90 degrees effective temperature. This is indicated by the rapid increase both of heat production and of body temperature at the higher temperatures. At 105 degrees effective temperature, the heat production is twice as great as at the ordinary temperature of 65 degrees. A tendency for an increase in heat production is also shown below 65 degrees effective temperature, which heat is necessary to keep the body warm in cold surroundings.

The experiments of the Bureau of Mines investigators correspond well with those of previous students of the subject in showing that body temperature and pulse rate correlate fairly well with the rate of basal metabolism. The pulse rate increases approximately in direct proportion to the metabolic rate; therefore, the heart works just fast enough to supply the tissues with the extra oxygen needed. Benedict and Du Bois[3] have recently noted that there is an increase in oxygen consumption during sojourn in highly desiccated air, amounting to from 5 to 10 per cent. after from one to one and one-half hours in the hot environment. It is apparent, therefore, that some of our conceptions of metabolism under tropical conditions may require revision. From the standpoint of investigative technic in the clinical laboratory, it is important to note that there is a zone of minimum metabolic rate between 75 and 83 degrees effective temperature within which basal metabolism should be measured.

Current Comment

EVALUATION OF PRESENT STATUS OF IODIN IN HYPERTHYROIDISM

The subject of hyperthyroidism has received so much attention in medical literature that recent contributors frequently begin their communications with apologies. Nevertheless, as argued by Hyman and Kessel,[4] "the pathogenesis of exophthalmic goiter is still open to question, and the therapeutic desideratum is still to be established." In their opinion the metabolic upset, characteristic of the disease, is merely superimposed on more basic sympathomimetic influences. Meanwhile, the argument for and against the use of iodin as a therapeutic and preventive agent continues Rienhoff[5] has recently presented histologic evidence that iodin produces an artificial remission, that the histologic picture changes from that of a hyperplastic to a colloid state, and that the colloid state is the less active of the two. Furthermore, the correlation of the so-called goitrous areas of the world with areas that are iodin poor, has been shown many times. In the matter of prophylaxis, from Shropshire in England[6] and from Manitoba in Canada[7] comes the conviction that iodized table salt is a most practical preventive of hyperthyroidism. Wheatley advocates one part of potassium iodid to every 50,000 to 100,000 parts of salt. Still the favorable attitude toward iodin treatment and prophylaxis is not unanimous, and Jackson[8] asserts that hyperthyroidism may be merely temporarily disguised after long periods of treatment with iodin. The same author refers to his report of "eighteen cases of iodin hyperthyroidism induced by the indiscriminate use of iodin in adenomatous goiters." In view of these divergent views, Kimball's analysis in this issue of The Journal merits consideration for its tolerant evaluation of the uses and abuses of iodin.

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THE HOSPITAL DIETARY—AN EXAMPLE OF RIGHT LIVING

The principles of public health have begun to loom larger and larger on the horizon of medical interest. They are no longer merely the concern of health officers or other special government officials; they must be dealt with in the everyday practice of the physician. The medical student of today is confronted not merely with the duty of ministering to the sick but also with the application of preventive medicine—of prophylaxis in its largest sense. More and more is this aspect of training for the prospective practitioner being introduced into the curriculum of the schools that prepare him for his life work.[9] The gospel of correct living, so far as man's bodily welfare is concerned, is destined to become an important theme for all medically trained persons: they must warn their followers against the potential menaces of the ordinary regimen and exhort them to choose the paths of hygienic rectitude. An equally urgent duty confronts the modern hospital, which has to provide for many on its staff who are not ill and for not a few patients whose ailments or injuries do not involve their nutritive welfare in any direct way. From this standpoint, Fitz and Lautz[10] of the Peter Bent Brigham Hospital in Boston, writing for the newly established *Journal of the American Dietetic Association,* remark that, in constructing normal diets, hospital dietitians must recognize common present-day dietetic errors and habits, and must remember that hospitals are becoming more and more centers of public health instruction for well and for sick persons. The most universal dietetic error, they believe, is the abuse of rich and concentrated foods in large quantities and irregularly. Such dietetic errors may result, at least, in obesity and chronic constipation. The public must be made to realize the possible dangers of obesity. Hospitals must set an example to their patients and personnel by serving model normal diets which are inexpensive, easily prepared, palatable and well cooked, which contain sufficient bulk, calories and protein to cover the ordinary metabolic and digestive needs, and which are so balanced in their food components as to be sound in theory and of practical usefulness. Another modern feature of institutional life consists in the prevention of "physical indolence" in the presence of current customs. As Haven Emerson has expressed it, if we would continue our appetites we must not abandon all exertion simply because opportunity of means and mechanical contrivance puts it in our power to do so.

THE DIAGNOSTIC TESTS FOR SYPHILIS

The Wassermann test for the diagnosis of syphilis has become a routine procedure wherever clinical medicine receives modern recognition. The original method has been simplified and modified to produce an extremely reliable hemolytic diagnosis of an important disease. However, there is undeniably a large element of empiric direction in all of the proposed reactions Accordingly, a competent reviewer[1] has not hesitated to remark that the strange vagaries of agglutination and Wassermann tests all show the inadequacy of our present knowledge, and how little we really know of intracellular chemistry As various classic tests for abnormal components of the urine and various procedures for the quantitative analysis of blood, gastric contents and digestive secretions, spinal fluid, and other analyzable body components have given way to novel modifications or entirely new reactions, so we may expect the even less definite *serodiagnostic tests to experience change with increasing* knowledge. In the diagnosis for syphilis, the Kahn test,[2] in particular, seems to be gaining a deserved popularity. It eliminates the use of such variable factors as guinea-pig complement and sheep blood cells, and is in this respect less subject to error than the Wassermann test. The rapidity with which a complete test may be executed makes it particularly valuable in cases in which an early diagnosis is of immediate importance, as, for example, for blood transfusion or in the collection of convalescent scarlet fever serum It is of interest, therefore, to learn that since October the laboratory of the Michigan Department of Health has ceased to run the Wassermann test on routine specimens for the diagnosis of syphilis, only the Kahn precipitation test being reported on.[3] Ample confirmatory evidence of the reliability of the latter has been secured through thousands of comparative tests. The Michigan commissioner of health states that there are several reasons for the change in procedure. They are both economic and scientific. He avers that the simplicity and accuracy of the Kahn precipitation test in the hands of a well trained personnel make it a more dependable test than the Wassermann test, as ordinarily run by diagnostic laboratories. It is quickly carried out, so that far more prompt service on blood specimens can be secured. The results of the Kahn tests are interpreted in the same way as the Wassermann, since the method of reporting is based on a comparison of more than 160,000 parallel tests in the Lansing laboratory, and by many thousand reports made by contemporary investigators. The innovation in Michigan will be followed with interest by all interested in diagnostic service.

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[7] Hamilton, T. Glen; and McRae, D. F.: Some Studies on the Incidence of Goiter Among School Children in Manitoba, Canad M A J **15**: 1017 (Oct.) 1925.

[8] Jackson, A. S: Exophthalmic Goiter and the Involuntary Nervous System, Correspondence, J A M A. **85**: 1660 (Nov. 21) 1925.

[9] Winslow, C E. A The Place of Public Health in a University, Science **62**: 335 (Oct. 16) 1925.

[10] Fitz, Reginald; and Lautz, Amalia: Certain Tendencies of Modern Hospital Dietaries for Normal People, J Am Dietetic A. **1**: 9 (June) 1925

[1] Garrison, F. H: An Introduction to the History of Medicine, Philadelphia, W B Saunders Company, 1922

[2] Kahn, R L: Serum Diagnosis of Syphilis by Precipitation, Baltimore, Williams & Wilkins Company, 1925

[3] Wassermann Test to be Replaced by Kahn Precipitation Test for Routine Specimens in the Laboratory of the Michigan Department of Health, J Michigan M Soc. **24**: 541 (Oct) 1925

Association News

ANNUAL CONFERENCE ON MEDICAL EDUCATION, FEB. 15 AND 16, 1926

Preliminary Program

The next conference of the Council on Medical Education and Hospitals *will be held at the Congress Hotel, Chicago*, Feb. 15 and 16, 1926. The preliminary program follows:

MONDAY, FEBRUARY 15

Cooperation in Educational Progress. Dr. Charles R. Mann, director of the American Council on Education, Washington, D. C.

The University's Function in Medicine. Dr. Henry M. Tory, president of the University of Alberta, Edmonton, Alta.

The Program of Medical Education and Its Reactions. Dr. Albert B. Dinwiddie, *president of Tulane University, New Orleans.*

Problems in Medical Education. Dr. A. *Stanley Mackenzie, president* of Dalhousie University Faculty of Medicine, Halifax, N. S.

Hindrances to the University Action in Medical Education. (*a*) Dr. Walter A. Jessup, president of the State University of Iowa, Iowa City. (*b*) Dr. David Kinley, president of the University of Illinois, Urbana, Ill. Discussion opened by Dr. Samuel P. Capen, chancellor of the University of Buffalo.

TUESDAY, FEBRUARY 16

Experiments *in Modifying the Medical Curriculum. Dr. Henry* S. Houghton, director of the Peking Union Medical College, Peking, China.

Saving Time in Education. (*a*) In High School and College. Dr. Charles H. Judd, professor and head of the Department of Education, University of Chicago. (*b*) In the Medical School by Shorter Vacations, Quarter *System, or other* Methods. Dr. Ray Lyman Wilbur, president of Stanford University, Stanford University, Calif.

Graduate Medical Education. (*a*) The University Graduate Medical School. Dr. Guy Stanton Ford, dean of the University of Minnesota Graduate School, Minneapolis. (*b*) Postgraduate Assemblies. Dr. William B. Peck, secretary of the Post-Graduate Assembly of America.

The Importance of Research in Educational Institutions. Dr. John M. Dodson, Editor of *Hygeia*, Chicago.

An Internship as a Part of Medical Education. (*a*) Selection of a Hospital for Intern Training. Dr. Henry A. Christian, professor of medicine, Harvard Medical School, Boston. (*b*) Purpose of the Hospital Internship. Dr. Ernest K. Irons, dean of Rush Medical College, Chicago. *Discussion by chairman* of Fifth Year Committee.

On Wednesday, February 17, will come the annual meeting of the Federation of State Medical Boards of the United States, and on Thursday, February 18, will be held the annual meeting of the American Conference on Hospital Service. Programs of these meetings will appear later.

Essentials of Good Medical Practice.—According to all the known facts of pathology and the causes of disease, it is essential before making attempts to treat a patient that the practitioner of medicine should be able first of all to make a diagnosis, and recognize whether the patient is suffering from a disease or not, and, if not, he cannot be in a position to treat intelligently and look after a patient by any method. In addition, it is necessary that he must have a knowledge of the different therapeutic measures and materials which are used in the treatment of disease, so that each individual patient may be treated in the proper manner.—Waring, H. J.: *Brit. M. J.* **2**:682 (Oct. 17) 1925.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

License Revoked.—At the regular meeting of the State Board of Medical Examiners, Little Rock, November 10, the license of Dr. Robert F. Clay, Forrest City, was revoked, it is reported, on a charge of inebriation.

Request on "Parking" Denied.—The Union County Medical Society, Eldorado, recently appointed a committee which petitioned the city council to allow physicians special privileges in parking near their offices, especially in emergency cases. The council decided that no special privileges would be allowed. Attorney Joe K. Mahony has offered his services without charge to members of the society at any time a member is apprehended for violating the parking ordinances.——The society also appointed a committee to request a veterinarian in the community to discontinue using on his car the "authorized physicians' auto emblem."

FLORIDA

War on Eating Places.—Health officials are conducting a campaign to improve the sanitation of eating places in West Palm Beach. They put out of business, November 9, it is reported, four "hot dog" stands, closed one restaurant and two soda fountains, and arrested nine café owners. Those arrested will be tried, it is said, for violation of the sanitary code.

Personal.—Dr. Donald S. Fraser, recently with the International Health Board of the Rockefeller Foundation at Andalusia and Montgomery, Ala., has been appointed district health officer for West Florida with headquarters at Pensacola.——Dr. L. M. Coulter, recently of Yonkers, N. Y., has been appointed district health officer in District 3, with headquarters at Tampa.——Dr. W. A. Claxton, recently with the U. S. Veterans' Bureau Hospital, Oteen, N. C., has been appointed district health officer in District 2, with headquarters at Miami.——Dr. Charles William Bartlett, Jr., has been appointed city physician of Tampa to succeed Dr. John A. *Barnes, on recommendation* of Dr. Ernest C. Levy, health officer.

GEORGIA

Personal.—Dr. Silas C. Rutland, La Grange, has been appointed head of the Troup County Board of Health to succeed Dr. Carp S. Kinzer, resigned.——Mr. Conrad Kinyoun, asistant bacteriologist in the Hygenic Laboratory, U. S. Public Health Service, has been appointed director of the Public Health Laboratories of Savannah.

ILLINOIS

Health Officer Appointed.—Dr. Thomas W. Rhodes, Cleveland, has accepted the position of health officer of the Quincy public health district, according to the Quincy *Whig-Journal*. Dr. Rhodes was formerly connected with the New York State Department of Health, was health officer at East Liverpool, Ohio, served in the World War and later was on duty at the Marine Hospital, Cleveland.

"Pan-Organic" *Specialist Arrested.*—*Dr. Edwin V. Heaton,* Danville, September 9, entered a plea of guilty on a charge of violation of the Harrison Narcotic Act and, it is reported, was sentenced to serve a term of six months in Vermilion County jail and to pay a fine of $200, and was paroled to Clint Tilton of Danville, Ill., for a period of one year. Dr. Heaton formerly is said to have advertised in the Battle Creek *(Mich.) Inquirer*, boosting "twilight sleep" and to have styled himself as examining physician for the "Pan-Organic Specialists."

Personal.—Dr. Anna H. McFarland Sharpe, formerly of Jacksonville, *has been appointed physician to the College* of Women, Tallahassee, Fla.——Dr. George C. Skinner has been named medical supervisor by the Veterans' Bureau, with headquarters in Washington. Dr. Skinner will establish contact with field officers of the Veterans' Bureau in the Middle West in an effort to standardize the medical administration.——Dr. Arlington Ailes, formerly health officer of

Shelby County, Ohio, has been appointed full-time officer for LaSalle, Oglesby and Peru, to succeed Dr. Edmund W. Weis.

Report on Venereal Disease.—There were fourteen counties in Illinois with a population of about 300,000 in which no case of syphilis was reported in the last fiscal year, and ten counties with about 300,000 population from which no case of gonorrhea was reported, and there were less than 1,000 of the 5,000 physicians in the state outside Chicago who reported any cases of venereal disease; yet, according to the state department of health, there were 31,254 cases of venereal disease reported in the year, of which 10,981 were syphilis and of these 8,457 were from Chicago. The case reports are probably far from complete. The total number reported last year averages about 100 cases daily.

Chicago

Personal.—Dr. Arno B. Luckhardt, professor of physiology, University of Chicago, addressed the International Acetylene Association at the Congress Hotel, November 19.——Dr. Max L. Folk has been appointed associate in ophthalmology at the Michael Reese Hospital.

Society News.—Members of the Chicago Medical Society gave a dinner, November 18, in honor of Dr. Oswald E. Denney, chief medical officer, U. S. Public Health Service, National Leprosarium, Carville, La., who addressed a joint meeting of the society with the Chicago Tuberculosis Society that evening.——Dr. Maurice L. Blatt addressed the Physicians' Fellowship Club, Logan Square Masonic Temple, November 20, on "Physical Examination of Infants and Young Children."——The second Ludvig Hektoen lecture of the Billings Foundation was given, November 27, before the Institute of Medicine of Chicago by Dr. Edward Francis, director, Hygienic Laboratory, U. S. Public Health Service, Washington, D. C., whose subject was "Tularemia." The sixth Pasteur lecture of the Institute of Medicine has been postponed until January. Preceding the tenth annual meeting at the City Club, December 1, 7:30, the institute will entertain the fellows at a dinner.

University News.—The National Research Council has granted the University of Chicago $10,300 for the support of work on the biology of sex under Prof. Frank R. Lillie, Ph.D., and Assistant Prof. Carl R. Moore, Ph.D.——The National Tuberculosis Association has granted the university $3,000 for the continuation of the study of the "Nutrition of the Tubercle Bacillus," by Dr. Esmond R. Long.——The Carnegie Corporation, through the American Association of Museums, has granted the university $2,500 for the investigation of "Museum Fatigue," by Associate Prof. Edward S. Robinson, Ph.D., of the department of psychology.——Dr. Ludvig Hektoen, head of the department of pathology, University of Chicago, since 1901, Prof. Albert A. Michelson, Ph.D., head of the department of physics since the founding of the university, and Dean Albion W. Small, Ph.D., head of the department of sociology and anthropology since 1892, are resigning as executive heads of their departments, and their places will be taken by Dr. H. Gideon Wells, Prof. Henry G. Gale, Ph.D., and Prof. Ellsworth Faris, Ph.D.

INDIANA

Sanitation in Tomato Canneries.—The *Bulletin of the Indiana State Board of Health* reports the inspection of 165 tomato canneries in the state, with the assistance of Burton J. Howard, U. S. Bureau of Chemistry, Washington, D. C.; William J. McCarthy and William T. Ford of the Cincinnati Branch U. S. Bureau of Chemistry, and the Indiana State Food and Drug Department. Three canneries were rated bad; twenty were rated poor, ninety-two fair and fifty good. Many tons of tomatoes were destroyed voluntarily by the packers to prevent spoilage because of an oversupply. The inspectors condemned a carload of tomatoes at Vincennes, about 14 tons at Orestes and about 6 tons at Alexandria. Three hundred and thirty-eight samples of catsup, chili sauce, paste and tomato pulp from ninety companies were examined by chemists for mold, which eighty samples contained in excess. Many recommendations made by the inspectors were accepted by the manufacturers, and other recommendations involving extensive changes will be put into effect before the next season.

MARYLAND

Survey of Health Conditions in Baltimore.—Under the direction of Dr. Valcoulon L. Ellicott, epidemiologist, health officials are completing a survey of Baltimore which is expected to be of great service. The plan, which is in use in other large cities, is to divide the city into "health units" according to variations in the types of the population, and a study of each division is now being made by the department. The general death rate, the infant mortality figures and the tuberculosis death rate will be recorded on a map; in areas where the tuberculosis death rate is high, additional tuberculosis clinics will be established, as will additional baby clinics in areas where the infant mortality is high. A high general death rate in an area will be the signal for the immediate concentration of health forces.

MASSACHUSETTS

The Lowest Diphtheria Record.—Not since 1861, when statistics on mortality in Boston were first available, has the number of deaths from diphtheria been so low as during the present year, and not since 1871, when diphtheria cases were first reported in that city, has the number of cases been so low. There were seventy-eight deaths in Boston this year up to November 1, and 1,073 cases reported. In some former years (even with a much smaller population) deaths from diphtheria amounted to 878. The average annual number of deaths for the last six years has been 150, and at times more than 5,000 cases were reported in the city in one year. It is evident, says the Boston Health Department, that the diphtheria situation this autumn is most exceptional and there is no reason to believe that the total figures for the year will be materially changed when reports for November and December are included.

MINNESOTA

Society News.—The annual memorial meeting of the Hennepin County Medical Society, held November 18, was addressed by Rev. Thomas E. Cullen, president of St. Thomas' College. Six members of the society died within the last year.

Personal.—Dr. John F. Norris has been appointed superintendent of the St. Peter State Hospital.——Dr. Otis W. Britt is managing the Southwestern Sanatorium at Worthington during the absence of the superintendent, Dr. Sidney A. Slater, who is expected to return about January 1.

MISSOURI

County Health Department Discontinued.—The county court at Albany recently decided to discontinue the county health department which has been maintained for the last three years, in view of a shortage of funds due to necessary expenditures in other departments. Dr. Thomas E. Graham was employed by the court as county physician.

Personal.—Dr. Elbert J. Lee, Jr., has been appointed head of the City Sanitarium, St. Louis.——Dr. William W. Graves, director and professor of the department of neurology and psychiatry, St. Louis University School of Medicine, St. Louis, has returned from Scotland where he delivered the Henderson Lecture at the University of Edinburgh, October 16. Dr. Graves also gave addresses at University College, London; University of Aberdeen; Queen's College, Belfast and before scientific societies in Glasgow and Dublin.——Dr. Clarence M. Grace, for nine years physician to the State Industrial Home for Girls, Chillicothe, has retired from that position, according to the Chillicothe *Tribune*.

Society News.—The Jackson County Medical Society, November 17, held a symposium on syphilis, in which Dr. George Wilse Robertson discussed "Tryparsamide, Malarial and Swift-Ellis Treatment of Paresis"; Dr. Richard L. Sutton, "Relative Value of the Modern and Old Methods in the Treatment of Early Syphilis," and Dr. Edward J. Curran, "Manifestations of Syphilis of the Eye." November 24, the society conducted a symposium on cardiac disease, in which Dr. Logan Clendening spoke on the "Modern Conception of Cardiac Failure and Its Therapeutics"; Dr. Henry P. Boughnou, "The Electrocardiograph and Its Aid in the Treatment of Heart Disease," and Joseph E. Welker, "Pericarditis."——The St. Louis Medical Society, November 6, constituted itself a nominating committee and unanimously presented Dr. Amand N. Ravold for president, Drs. Charles A. Vosburgh, Floyd Stewart and Christian F. Pfingsten, vice presidents, and Dr. Edwin C. Funsch, secretary.——Dr. Karl A. Menninger, Topeka, Kan., addressed the St. Louis Medical Society, October 27, on "Fundamentalism and Modernism of Psychiatry."

The Adcox Confession (Continued).—Dr. Robert Adcox says in his confession in the St. Louis *Star* that Frank J. Kenney studied while serving in a Massachusetts jail how to continue his career without interference from the law and that he bought a ticket for St. Louis on the day he was released. Kenney had sold a medical diploma to one Abraham J. Friedman of Boston, who, in attempting to get by the Massachusetts state board, was found out, with the result that Kenney was indicted and jailed. Kenney organized, says Adcox, the Eastern University School of Medicine, Baltimore, and the Maryland University of Medicine and Surgery, neither of which ever existed in fact, their total equipment consisting of fancy diplomas, credential certificates, attendance cards and "great seals." Adcox and Kenney arranged a schedule of prices for credentials, the complete set to cost $250. While Samuel Kapland and Adcox were partners in a manufacturing business under the name of the Bio-Chemical Company, Kaplan secured a diploma from the St. Louis College of Physicians and Surgeons which cost him $500. He took a correspondence course in medicine later offered by some institution in Washington; then he took an examination before the Missouri state board and failed. Kaplan has been indicted in Washington in connection with diploma mill frauds. About this time, Adcox learned that students were being enrolled at the St. Louis *College of Physicians and Surgeons without his assistance* and that their credentials were supposed to have been issued by Dr. Frank P. Young of the Pacific Medical College. Adcox went to California to meet Dr. Young, with whom he says he arranged to obtain credentials and diplomas for a certain price. He says also that hundreds of these diplomas were sold to chiropractors, osteopaths and other drugless healers, and that there are now in the United States some 3,000 or 4,000 persons who have in this manner graduated from the Pacific Medical College, which institution never had a graduating class. Educational credentials of every kind were now available to Adcox in many states. He was able to obtain "real honest-to-goodness" high school diplomas from a number of high school principals and professors which no board of medical examiners would question. He had on his list educational officials in Illinois, Pennsylvania, Indiana, *Washington, Kansas, Missouri and the District of Columbia.* The low grade medical colleges now had capacity enrolments, quack schools were being opened, and "drugless healers appeared in countless droves." Adcox' next move was a trip to San Francisco to get in touch with a Rev. D. Cutting of the "First Spiritual Church of the City of San Francisco."

NEW JERSEY

Personal.—Dr. William A. Clark tendered his resignation, October 27, as a member of the staff of the State Hospital, Trenton, in order to resume private practice.

Chiropractors and Others Fined.—The New Jersey State Board of Medical Examiners reports the following legal action taken recently against certain chiropractors, druggists and others:

Lester Klein, William J. Sweeney, Alfred C. Davis and John Kugel, Newark; Walter H. Stansbury, Freehold; Francis A. Curtis, Asbury Park, and John Miller, Paulsboro, chiropractors, were tried on charges of practicing medicine without a license, and judgment was entered in each case for the penalty and costs.

Philip Pabst, Arlington; Cecil G. and Robert Williams, Hackensack; Romeo Nastasia, *Long Branch*; Harold E. Welsh, Cape Bay; Robert Welsh, Wildwood, chiropractors, each pleaded guilty to charges of practicing medicine without a license and paid the penalty and costs.

John H. Conover, Union Hill, a chiropractor who was tried on a third charge of practicing without a license, refused to pay the fine and was committed to jail for 100 days. Wendall H. Cronk, Vineland, a chiropractor, refused to pay the fine for the same violation and was sent to jail for ten days.

Alexander Livingstone, Pensgrove, and Gióciato Cusa, Asbury Park, *druggists*, were tried on charges of violating the medical practice act. Livingstone paid the penalty and costs; judgment was reserved in the case of Cusa.

Hannah Olson, Ocean Grove, and Jennie Coulter, Wildwood, were tried for violation of the medical practice act. Judgment was entered for the penalty and costs. Kathryn Quinn, Ocean City, paid the penalty and costs for practicing without a license.

NEW YORK

Hospital News.—Plans are being completed for a million dollar hospital and medical school at the Albany City Hospital, Albany.——The Harlem Valley State Hospital, Wingdale, has awarded contracts for the construction of a $2,900,000 building.——The Coney Island Hospital Alumni Association, Brooklyn, has elected Dr. Moses A. Bluestone, president; Dr. Samuel E. Last, vice president, and Dr. Louis Klein, secretary.

Goiter Prevention at Syracuse.—The medical examination of 25,799 school children in 1923 showed that 4,152 had enlargement of the thyroid gland. Notices were then sent to parents recommending that the family physician be consulted and asking, where this recommendation was not followed, for permission to administer iodin tablets under the direction of the school physician. A year later the students under treatment for goiter were reexamined, and of these there remained in school 2,358, of whom more than 600 were found to need no further treatment. During the school year 1924-1925, there were 1,639 of the original number taking the iodin tablets, and on reexamination many of these were able to discontinue treatments. The schedule of treatments will be resumed by the school authorities this year after reexamination, but the treatment of high school pupils will be discontinued, as it is felt that they are able for the most part to go to their family physician.

New York City

Report of United Hospital Fund.—This organization aids its fifty-six member hospitals to meet their financial needs through joint planning and common services; its predecessor—the Hospital Saturday and Sunday Association—first went to the charitable public of New York with an appeal for funds fifty-six years ago, and the collection made then amounted to $26,000. Since 1879, the United Hospital Fund has collected more than $7,000,000. In the last annual report the president said that in 1919-1920, the fund turned its collection over to fifty-six hospitals with an aggregate of 3,010,699 hospital days, of which 1,431,677 were given free. Recently the distributing committee turned over to the fifty-six members of the fund $500,000 for aid to the poor. The next annual appeal to the public for funds began, November 23, and it is hoped and expected that contributions this year will amount to $1,000,000. To be a member of the fund, a hospital must be incorporated and have maintained a minimum of thirty-five beds for three years or more and have given a minimum of 5,000 days of free service a year in the same period. Hospitals falling below these standards lose their membership in the fund. There is a board of forty trustees, who are chosen from the fifty-seven representatives of the member hospitals and from the forty-eight members at large and ex-officio members representing the general public. The general director, appointed eight months ago, is Minott A. Osborn, and the president, Mr. Henry J. Fisher, who has been a trustee since 1915. The United Hospital Fund now has an endowment of $551,674.66.

NORTH CAROLINA

Personal.—Dr. Clyde E. Cotton, Asheville, has been elected president of the Rotary Club of that city.——Dr. Edward P. Odend'hal, chief medical officer at the U. S. Veterans' Hospital, Oteen, has been promoted from lieutenant-colonel to colonel.——Dr. George C. Jones, for the last eighteen months on duty at the federal hospital, Oteen, has resigned and will devote his attention to real estate in Asheville.

Society News.—The Ninth District Medical Society, Lexington, adopted a resolution commending the state board of medical examiners for revoking the licenses of several physicians recently convicted in court for violations of the Harrison Narcotic Law. Officers elected for the ensuing year are Dr. Jarvis R. Terry, Lexington, president; Dr. Andrew Baxter Byerly, Cooleemee, vice president, and Dr. James W. Davis, Statesville, secretary (reelected).——Dr. William deB. MacNider, president of the State Medical Society, was guest of honor at the annual meeting of the Second District Medical Society, Washington, November 13.—Dr. Claiborne T. Smith, Rocky Mount, was elected president of the Fourth District Medical Society, November 10; Dr. Spencer P. Bass, Tarboro, vice president, and Dr. George M. Brooks, Elm City, secretary-treasurer. The next meeting of the society will be in Wilson.—Members of the Sampson County Medical Society have initiated a move to secure a county hospital for Sampson County with a view to securing aid in its maintenance from the Duke Foundation on a basis of one dollar a day for each occupied free bed.——Dr. Clarence A. Mills, University of Cincinnati College of Medicine, addressed the Buncombe County Medical Society, Asheville, November 17, on "Hemorrhage: Its Pathology and Treatment."

OHIO

Committee to Inspect Penitentiary.—Following the report of the prison physician that fifteen prisoners had died of tuberculosis in the last year compared with only eighteen from all other causes, and that about fifty other prisoners had tuberculosis, the governor has appointed a board to survey health conditions in the state penitentiary, Columbus. The members appointed were Drs. Charles O. Probst, Charles S. Hamilton, Dora V. Burkett, William P. Smith, Isaac B. Harris, Sterling B. Taylor, Harry R. Burbacher and Andre Crotti.

Diphtheria in Cleveland.—The *Bulletin* of the Academy of Medicine of Cleveland tabulates the amount of diphtheria in that city in the last thirteen years. There were 2,605 cases reported in 1912, and 1,100 in 1924, with a mortality per hundred thousand of 27.2 and 8.7, respectively, and a morbidity rate of 426 and 120. There has not been much reduction in the case fatality rate, which was 6.4 in 1912 and 7.2 in 1924, with very little change in intervening years. The chief of the bureau of child hygiene of the Cleveland Health Department considers that the reduction in morbidity and mortality since 1921 has been due to immunization, to reduction in contacts with cases and carriers and to better control of contacts. The almost stationary case mortality rate indicates that there has been no improvement in the care of the individual case since 1912; seventy-nine persons died of diphtheria in Cleveland in 1924.

Personal.—Dr. William E. Brown has been appointed assistant professor of preventive medicine at the University of Cincinnati College of Medicine, Cincinnati. Dr. Brown is a graduate of Harvard University Medical School, Boston, and has a C.P.H. from the Harvard-Technology School of Public Health.——Dr. William B. Wherry, professor and head of the department of bacteriology and hygiene, University of Cincinnati College of Medicine, has been appointed a member of the board of health of that city to succeed the late Dr. Edward W. Walker. Dr. Wherry formerly was an officer in the U. S. Public Health Service, and according to the secretary of the faculty, University of Cincinnati College of Medicine, served in the Orient, and during the last outbreak of bubonic plague in San Francisco discovered plague among the ground squirrels in California.——Dr. Lewis P. Jackson, Van Wert, who was charged in common pleas court with performing an illegal operation, was found not guilty, November 7.——Dr. William C. Martin has been elected mayor of Monroeville.——Dr. Louis A. Witzeman has presented the City Hospital, Akron, with a new operating table. The Community Chest has allowed the City Hospital in its budget for the year 1926, $40,000.

PENNSYLVANIA

License Restored.—It is reported that the license of Dr. James P. Kirk, which was suspended, Dec. 10, 1924, was restored, August 21. The Journal noted in the news, Oct. 11, 1924, that Dr. Kirk was being held in the Erie County jail, awaiting transfer to the penitentiary at Atlanta, Ga., for violation of the Harrison Narcotic Law. He was sentenced to one year and a day.

Editor Appointed.—The trustees of the State Medical Society of Pennsylvania announce the appointment of Dr. Frank C. Hammond, Philadelphia, as editor of the *Atlantic Medical Journal.* Dr. Hammond, who is clinical professor of gynecology and dean of Temple University Department of Medicine, Philadelphia, has for many years been a member of the publication committee.

Health Play Contest.—A health play contest for the school year 1925-1926 has been arranged by the National Tuberculosis Association. The contest is open to junior and senior high schools. Plays must deal with individual or community health or hygiene, and prizes ranging from $10 to $100 will be paid to the winning school. Plays from Pennsylvania schools should be submitted to the Pennsylvania Tuberculosis Society. The national judges are Dr. James Mace Andres, Ph.D.; Hughes Mearns, and Dr. Charles E. A. Winslow, of Yale University. A manual on the contest and play writing can be secured from the Pennsylvania Tuberculosis Society.

New Registration Law.—The new annual registration law requires all persons now engaged in the practice of the healing art, and all who are hereafter licensed, to register annually with the board of medical education and licensure of the department of public instruction before the second day of January, and to pay a fee of $1 for the registration. Forms are being issued to all practitioners, that they may comply with the act of the assembly. The penalty for failure to register is a fine of from $10 to $100 on conviction, or, in case of nonpayment, not exceeding ten days in the county jail. The money received from annual registrations shall be available for the use of medical education and licensure for the purpose of enforcing the law against illegal and nonregistered practitioners.

Free Graduate Lectures.—The University of Pennsylvania Graduate School of Medicine gave a series of lectures to physicians without fee or registration. Dr. George E. Pfahler, professor of radiology, discussed "Electrocoagulation and Radiation in Benign Skin Lesions," November 9; Dr. Edgar N. Cowan, assistant professor of biochemistry, "Clinical Hemochemistry," November 10; Dr. John A. Kolmer, professor of pathology and bacteriology, "The Nature and Pathogenesis of Bacterial Toxins," November 11; Dr. Edward Lodholz, Isaac Ott professor of physiology, "Instinctive Reacting Systems and Their Physiologic Characteristics," November 12; Drs. Edward B. Krumbhaar, Elmer V. Eyman and others gave a conference on "Interesting Autopsies," November 13, and Dr. James Harold Austin, department of research medicine, "Chemistry in the Treatment of Disease," November 14.

Personal.—Dr. George E. de Schweinitz, formerly President of the American Medical Association and a trustee of the University of Pennsylvania, addressed the Warren County Medical Society, Warren, November 9, and was guest of honor at a dinner given by the University of Pennsylvania Alumni.——Dr. Edmund Roger Samuel, Mount Carmel, was elected president of the Northumberland County Health Association, November 10, and Dr. Robert B. McCay, Sunbury, secretary-treasurer. Among those present at the meeting from the state board of health were Dr. Charles H Miner, Harrisburg, commissioner, and Dr. Edgar S. Everhart. ——At the fiftieth meeting of the Pennsylvania Association of Directors of the Poor, Lancaster, October 20-22, Prof. Carl Kelsey, Ph.D, University of Pennsylvania, spoke on "A Half Century of Poor Relief—a Brief Contrast of Changed Conditions."——Dr. Arthur P. Keegan has been appointed coroner's physician of Philadelphia County to succeed Dr. Richard D. Burke.

Philadelphia

Personal.—Dr. Francis C. Grant, instructor in surgery in the Graduate School of Medicine, University of Pennsylvania, has been granted leave of absence until June, 1926, to do special work in the Brighton Hospital, Boston.

Society News.—Dr. Samuel J. Crowe, Johns Hopkins University School of Medicine, Baltimore, addressed the Section on Otology and Laryngology of the College of Physicians, November 18, on "Clinical and Pathological Studies of the Ear."——Dr. Charles R. Stockard, professor of anatomy, Cornell University Medical College, New York, addressed the second annual open meeting of the Biochemical Society of Jefferson Medical College, November 17, on "Recent Advances in the Study of Internal Secretions."—— Dr. Arthur C. Morgan recently addressed the Northern Medical Association of Philadelphia at the Majestic Hotel on "Prognosis of Certain Respiratory Diseases," and Dr. Joseph Sailer on "Prognosis of Heart Disease," (lantern slides). ——The free lecture for the public at the University of Pennsylvania, November 21, was given by Dr. Henry F. Smyth of the School of Hygiene and Public Health, on "Poisonous Gases in the Industries."—Dr. A. B. Vastine, D.D.S., of the George F. Geisinger Memorial Hospital, Danville, addressed the Academy of Stomatology at the College of Physicians, 19 South Twenty-Second Street, November 24, on "Radicular Cysts, Their Recognition, Significance and Surgery."——Dr. William Allen Pusey, formerly President of the American Medical Association, will address the Philadelphia County Medical Society, December 9, on "Medical Education."

SOUTH CAROLINA

Unit to Study Hygiene of Cotton Mills.—The U. S. Public Health Service will establish in Greenville about December 1, according to the Greenville *News,* a unit comprising a staff of physicians, nurses, clerks, stenographers and others, to make an extended study in that area of industrial hygiene and sanitation in relation to the cotton mills. A representative of the Public Health Service recently acquainted the community with the object of the unit. Four other units in various sections of the country have been established to investigate health conditions in other industries, one in the coal fields of Pennsylvania, another in the cement works at Hagerstown, Md., a third in the silver plating industry near Baltimore, and a fourth in the granite mines of Vermont. The Greenville unit will be the first in the textile industry. The study will cover a period, it is said, of at least two years.

TENNESSEE

Society News.—Dr. William O. Floyd, Nashville, addressed the Tri-County Medical Society at Huntington, recently, on "Surgical Care of Organic Lesions of the Stomach," illustrated with lantern slides. Dr. William O. Taylor was elected president to succeed Dr. Virgil E. Massey; Dr. Richard M. Little, Martin, was reelected secretary; Dr. Harry L. Alexander, McKenzie, was elected vice president for Carroll County; Dr. Edward A. Travis, Como, vice president for Henry County; Dr. James M. Smyth, Camden, vice president for Benton County, and Dr. Basil S. Mayo, Dresden, vice president for Weakley County.

TEXAS

Decrease in Malaria.—The state board of health reports that malaria in the last five years has decreased from 49,256 cases in 1921 to 9,299 cases in the first nine months of 1925, and that deaths from malaria decreased from 523 in 1921 to 102 in the first six months of 1925. Control work in Texas for the year ending September 30 afforded protection against malaria to more than 900,000 citizens in urban districts at about 6 cents per person; work in rural districts was carried on only in counties having full-time health units; the state board of health assisted in securing the drainage of about 14,000 acres of land and in educational work—fifty lectures on mosquito control, forty news items, the exhibition of mosquito films and the distribution of about 20,000 placards and other mosquito control literature. Mosquito control work against yellow fever was carried on along the Mexican border by the U. S. Public Health Service, with the cooperation of the state board of health and the communities concerned.

VERMONT

James E. Hair Fined.—Dr. James E. Hair, late secretary of the Eclectic Medical Examining Board of Connecticut, was recently fined $50 and costs for practicing medicine in Vermont without a license. Hair, so far as our records show, is not a graduate of any reputable medical college. He does, apparently, hold a diploma from the notorious diploma mill Kansas City College of Medicine and Surgery. He was long connected with the Connecticut Eclectic Examining Board, which became notorious by licensing scores of fake doctors whose licenses were later revoked by the Connecticut Department of Public Health, while the examining board, of which Hair was secretary, was put out of business.

VIRGINIA

Fund for Organizing County Societies.—At the last annual meeting of the Medical Society of Virginia, the house of delegates voted to appropriate $1,000, or as much thereof as is necessary, to be expended by the secretary for the organization and reorganization of county medical societies. The councilors of the respective districts are to visit the field with the secretary when necessary.

Society News.—Dr. Wendell C. Phillips, New York, president-elect of the American Medical Association, addressed the house of delegates of the Medical Society of Virginia, October 15, at the annual meeting in Richmond, on "The Achievements of the American Medical Association."——Dr. Alfred P. Jones has been elected president of the Roanoke Academy of Medicine, Roanoke; Dr. Marcellus A. Johnson, Jr., and Hugh J. Hagan, vice presidents, and Dr. Paul Jones, secretary.

Personal.—Dr. Manfred Call, Richmond, won the Roanoke Academy of Medicine cup in the golf tournament held at the recent meeting of the Medical Society of Virginia, Richmond. Dr. Call has also been reelected for the fourth consecutive year dean of the School of Medicine of the Medical College of Virginia, Richmond.——Dr. Ernest H. Alderman has been appointed first assistant physician at the Eastern State Hospital, Williamsburg, succeeding Dr. Baxter I. Bell, who has entered private practice.——Dr. Charles H. Moncure has been elected health officer of Orange.

WASHINGTON

Proposed Basic Science Bill.—The Public Health League was instrumental in introducing a bill in the last legislature which would prescribe the educational qualifications of applicants for licenses to practice the healing art. It proposed a committee of five members of the faculty of the University of Washington learned in the sciences of anatomy, physiology, chemistry, pathology and hygiene, to conduct examinations of applicants to practice, to be appointed by the president of the university. A person desiring a license to practice any healing art would first apply for examination before this committee and pay a fee of $10, provided the applicant proved to the committee that he had at least two years of college training, including instruction in the sciences enumerated. If the applicant passed with an average of not less than 75 per cent., the committee would issue him a certificate to be filed with the state treasury, together with his application and fee required by law to take the examination for a license to practice. Since the last legislature closed its session early, the Public Health League plans to introduce a similar bill when the legislature reconvenes.

WEST VIRGINIA

Society News.—Dr. Max Kahn, Baltimore, addressed the Barbour-Randolph-Tucker County Medical Society, October 15, at Elkins, on "Bone Tumors"; the society recently secured at its own expense the film "Play Safe," for the public school auditorium.

Personal.—Dr. Quintard Taylor, medical director at White Sulphur Springs, has resigned to go to Garden City, Long Island.——Dr. Robert J. Wilkinson, Huntington, has been elected president of the Chesapeake and Ohio Railway Surgeons Association. The association will meet again next year at White Sulphur Springs.

WISCONSIN

Hospital News.—The board of trustees of the Milwaukee County Dispensary has recommended that the position of dispensary chief be abolished and that the position of a part-time clinical director be created. The county civil service commission recently held an examination for the position of dispensary chief; none of those who applied for the position were able to qualify.

Society News.—Hon. Walter D. Corrigan, Milwaukee, addressed a joint meeting of the Kenosha County Medical Society and the Kenosha Dental Fraternity at St. Catherine's Hospital, October 6, on "The Defense of Aaron Burr."——Dr. Charles A. Elliott, professor of internal medicine, Northwestern University Medical School, Chicago, addressed the Outagamie County Medical Society, October 20, on "Goiter," and conducted a clinic at St. Elizabeth's Hospital.——Dr. Roland S. Cron, Milwaukee, addressed the Racine County Medical Society at St. Mary's Hospital, Racine, October 22, on "The Prevention and Relief of Prolapsus Uteri."——Prof. Geza de Takats, Budapest, addressed the Milwaukee Oto-Ophthalmic Society, November 19, on "Prolongation of Local Anesthesia, Experimental and Clinical Research" (lantern slides).

PANAMA CANAL ZONE

Society News.—The two hundred and twenty-sixth meeting of the Panama Canal Zone Medical Association was held at the Santo Tomas Hospital, October 20, under the presidency of Dr. Charles R. Mueller, Jr., and with seventy-six members in attendance. Dr. Edgar W. Davis spoke on "The Use of Mercurochrome in Santo Tomas Hospital." Cases of beriberi and gas gangrene were presented.

CANADA

Society News.—Dr. W. Blair Bell, professor of obstetrics and gynecology, University of Liverpool, England, addressed a closed session of the Toronto Academy of Medicine, Toronto, November 10, at which time he submitted a report on his research on cancer.

Personal.—Dr. David A. Stewart, Ninette, Manit., has been elected president of the Manitoba Medical Association.——Dr. Walter C. Chipman, professor of gynecology and obstetrics, McGill University Faculty of Medicine, Montreal, was elected president-elect of the American College of Surgeons at the annual meeting at Philadelphia, October 29.

GENERAL

News of Epidemics.—Restrictions on public meetings and on attendance in the public schools, established in Louisville, Ky., October 22, on account of an outbreak of infantile paralysis, were removed, November 2, following a conference of the board of public safety with the health authorities. From September 11 to November 10 there had been forty-six cases and four deaths.——The board of health of Carrollton, Ky., recently closed the graded schools on account of an outbreak of diphtheria, which was the first time in fifteen years that the city schools had been closed by an epidemic except that of influenza in 1918.——The public school of Oswego, Ill., recently closed on account of an outbreak of diphtheria, more than twenty cases being reported.——The ban in Bloomington, Ill., on public meetings due to an outbreak of smallpox, was lifted, November 6

Society News.—The Eastern Section of the American Sanatorium Association elected at its annual meeting, November 13, at the New Jersey Sanatorium for Tuberculous Diseases, Glen Gardner, and at the Essex Mountain Sanatorium, Verona, Dr. Frederick H. C. Heise, Trudeau Sanatorium, Trudeau, N. Y, president; Dr. Hugh B. Campbell, medical director, Norwich State Tuberculosis Sanatorium, Connecticut, vice president, and Dr. Ernest B. Emerson, medical director, Massachusetts State Tuberculosis Sanatorium, Rutland, Mass., secretary-treasurer. Among others, Dr. Eugene L. Opie, Philadelphia, spoke on "Latent Tuberculous Infection and Its Relation to Pulmonary Tuberculosis," and Dr. Edgar Mayer, Saranac Lake, on "Physics and Therapeutics of Light, with a Plea for Its More Extensive Use." ——Dr. Willard Smith, Phoenix, Ariz., was elected president of the Medical and Surgical Association of the Southwest at the recent eleventh annual meeting in El Paso; Drs. Willis W. Waite, El Paso, and Le Roy S. Peters, Albuquerque, N. M., vice presidents, and Dr. William Warner Watkins, Phoenix, secretary-treasurer.

Awards of Medical Women's National Association.—This association started a scholarship fund at its meeting in Atlantic City last June with a gift of $1,000 and another of $500, promised for three years; another gift of $500 has since been made. Candidates for scholarships who intend to be medical missionaries for at least five years after graduation may receive funds as an outright gift, and candidates who intend to do general practice may receive funds as a loan to be repaid on the terms of the committee. The candidates accepted must be "of the highest character, the soundest educational preparation and most promising personality," and they must attend an A-1 medical college. The awards for 1925-1926 are to (1) Eleanor T. Hedrick, who will attend the College of Physicians and Surgeons, Columbia University, New York; (2) Luenna von Eltz, who will attend the Boston School of Medicine; (3) Mary A. Churchill, who will attend the Woman's Medical College of Pennsylvania, Philadelphia, and (4) Helen Semenenko, who will complete her studies, begun in the Constantinople Woman's College, at Tufts College Medical School, Boston.

LATIN AMERICA

Bicentennial of the University of Caracas.—Our Venezuela exchanges bring illustrated descriptions of the celebration of the founding of the university by Philip V. in 1725. The souvenir medal portrays the republic as a woman holding aloft a nine-branched torch to represent the first nine departments of the university. Appropriate tablets with historical inscriptions were unveiled. Dr. Diego Carbonell, the rector of the university, delivered the principal address of the gala meeting.

All Universities Closed by Government Decree.—The secretary of the U. S. Legation, Quito, writes in *School Life* that all universities in Ecuador were closed, August 11, by government decree. The universities were located at Quito, Guayaquil, Loja and Cuenca. There has been discontent for many years, he said, with the so-called higher education in that country. It has been too easy to obtain degrees, with the result that the country is flooded with doctors, the majority of whom are unable to earn a living and many of whom do harm by attempting to practice a profession for which they are not well prepared. The decree states that the universities will be closed temporarily, but it is believed they will remain closed for several years. One result probably will be the sending of more students abroad for higher education. The majority of local university students cannot afford to go abroad.

FOREIGN

Harveian Society Prize.—The Harveian Society of London has selected "The Etiology of High Blood Pressure and of the Respiratory Phenomena Associated with High Blood Pressure and Chronic Nephritis" as the subject for the Buckston Browne prize. The competition is open to any member of the medical profession registered in the British Isles or dominions under 45 years of age. The prize is a medal and the sum of £50.

Secretary on Organizing Tour.—Having been authorized by the council, and on "pressing request" from the South African Committee, the medical secretary of the British Medical Association, Dr. Alfred Cox, sailed, October 30, for South Africa on an organizing tour of all the branches there. He will confer with the South African Committee and will see as many members of the medical profession in that country as possible, reporting to the South African Committee and to the council on his return. The council instructed Dr. Cox to convey to the committee its best wishes for the success of its efforts to promote the solidarity of the profession in South Africa.

Chairman's Badge of Honor.—The British Medical Association, at its meeting in Bath recently, requested Mr. Allan G. Wyon to design and prepare a badge of office for the chairman of the council of the association. The badge has been prepared. It takes the form of a gold and enamel star, about 3⅝ inches across, with the central device a replica of the staff and serpent of Aesculapius in the form in which they appear above the Memorial Gates of the association's new home. Between the main star and the locket loop by which the badge is suspended is a smaller star bearing the initials "B. M. A.," and around the central device is the inscription "Chairman of the Council." The badge was presented to Dr. Robert A. Bolam at the council meeting, October 21.

No Nobel Medical Prize This Year.—The committee on award of the Nobel Foundation has decided to withhold the prizes this year in medicine, chemistry and literature, because, says the *Chicago Daily News*, no candidate had been proposed of sufficient importance. Alfred Nobel's will directed, it is said, that prizes be given to persons who had rendered humanity the greatest services in medicine, chemistry, physics, idealistic literature and the promotion of peace. The constitution of the Nobel Foundation, framed after the philanthropist's death, directs that no prize be awarded unless a work of sufficient importance has been accomplished. The Swedish government's taxes on the foundation last year amounted to about $162,000; the taxes, the *News* says, increase annually, causing a constant diminution in the value of the prizes.

Epidemiologic Report.—A total of 151 deaths had been reported, September 26, in the outbreak of cholera in Shanghai, according to the *Epidemiological Report* of the Health Section of the League of Nations, October 15. There were only six new cases reported in this outbreak the week ending September 26. The outbreak in Yokohama at that time seemed to be under control, but cases occurred during September in Kobe and Osaka. There was an outbreak of cholera in Manila the week ending September 26, when seventy-three cases were reported. There had been 145 cases and seventy-two deaths in Siam from cholera since the beginning of the year, and 160 cases in French Indo-China. The outbreak in Ceylon amounted to 223 cases and 158 deaths since the beginning of the year.——The incidence of typhus was lower during the last summer than at any time since before the war. The number of cases exceeded 100 only in Russia, Poland and Roumania, and in these places amounted to less than half of last year's figure. The mortality rate has been generally lower also, varying from 2 to 5 per cent. Typhus is more prevalent in North Africa than in 1924.——No case of smallpox occurred during the first eight months of the year in Ireland, Sweden, Finland, Austria, Bulgaria or Czechoslovakia, and only a few cases occurred in Scotland, Norway, Esthonia, the Netherlands and Hungary. A serious outbreak occurred in the Tanganyika territory in Africa, where 1,180 cases and 427 deaths were reported in August.——Reports for August show a higher incidence of infantile paralysis in many European countries but no serious epidemics occurred. The increase is most marked in Norway, Sweden, Denmark, Germany, France and Italy. There were 935 cases in twenty-seven states in the United States in the four weeks ending September 5, as against 696 cases during the preceding four weeks and 654 during the corresponding period of last year. ——This number of the report contains also several columns devoted to the history and epidemiology of yellow fever.

Deaths in Other Countries

Dr. **F. Tartuferi**, Bologna, professor of ophthalmology. ——Dr. **G. Perna**, Messina, professor of anatomy.——Dr. **Terson**, formerly professor of ophthalmology, Toulouse, aged 87.——Dr. **E. Franke**, professor of ophthalmology, Hamburg, aged 69.——Dr. **C. Bliedung**, privat-dozent of ophthalmology, Greifswald, aged 36.——Dr. **L. Voigt**, chief of the vaccination service, Hamburg, aged 90.

Government Services

Patients in Army Hospitals

There were 5,376 patients in army hospitals in United States, October 10, of whom 2,878 were active army or navy personnel; 1,960 beneficiaries of the Veterans' Bureau; 141 beneficiaries of the Soldiers' Home, and 397 civilians, including retired army and navy personnel, employees, dependents of officers and enlisted men and men in training. Of the total number of patients, 3,826 were in general hospitals, including the Station Hospital at Fort Sam Houston. At the end of the corresponding week of last year there were 3,833 patients in these same general hospitals, a decrease of seven for the present year.

Number of Flight Surgeons

According to a statement issued through the U. S. Army Air Service, there are sixty-seven flight surgeons in the regular army, twenty-six in the navy, twelve in the reserve corps and national guard and a number who have left the army and are now in civil life; in addition, there are twenty officers in the reserve and national guard who have qualified as physical examiners of aviators. The duties of a flight surgeon, the statement says, are: (1) selection of the flier by careful physical and mental examination; (2) classification of the flier by various special tests; (3) the care of the flier whereby he is maintained in a state of physical efficiency. The first involves a knowledge of general medicine, psychiatry, ophthalmology and otology; the second, physiology and psychology, and the third, physiology, psychiatry and general medicine. The physical requirements of aviators are such that less than 50 per cent. of the cadets at West Point and Annapolis are physically qualified to fly. Before the World War, physical factors involved in flying had not been studied, and there were no flight surgeons. The center for training flight surgeons in the School of Aviation Medicine, Mitchell Field, Mineola, L. I.

Report of Special Committee of Veterans' Bureau

Recommendations that Congress authorize more commodious accommodations at Saint Elizabeth's Hospital for the Insane in the District of Columbia are made in a report to the director of the Veterans' Bureau, by a special committee chosen to investigate conditions existing in this hospital so far as they affect veterans. The committee's report contains no facts to substantiate charges recently made by a federal grand jury of alleged maltreatment of insane patients, inadequacy of medical attention or improper detention of such patients. One criticism contained in the report is that physicians of the hospital are required to spend too much time doing clerical work. "In regard to alleged maltreatment of patients by attendant," the report states, "this committee questioned numerous patients and made personal observation in the different wards without eliciting any instances of such actions. General conditions at the hospital concerning sanitation, adequacy and quality of food and medical attention were all thoroughly investigated. In this inspection, which included the wards for the criminal insane, all wards were found to be maintained in an efficient and orderly manner" The hospital is caring for 4,500 patients in buildings which can adequately care for only 3,500.

U. S. Public Health Service

Surgeon Roy P. Sandidge will proceed not more than four times during the fiscal year 1926 between Honolulu and the Island of Molokai in connection with leprosy studies. ——Surgeon Wade H. Frost was directed to proceed from Baltimore to Cincinnati and return for a conference, November 11, regarding stream pollution.——Consultants Edwin O. Jordan, Chicago, Langdon Pearse, Chicago, and Earle B. Phelps, New York, were directed to proceed to Cincinnati and return, for a conference, November 11, regarding stream pollution investigations of the service.——P. A. Surgeon Kenneth F. Maxcy was directed to proceed from Montgomery, Ala., to Washington D. C., and return, for a conference with reference to an investigation of Brill's disease.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 9, 1925.

Professor Langley

John Newport Langley, F.R.S., professor of physiology at Cambridge, has died in that city, at the age of 73 years, from double pneumonia. He was one of the leading physiologists in the world, a skilled experimentalist and an accurate observer. He was educated at St. John's College, Cambridge, where he was a scholar in 1871, the year after Michael Foster came to Cambridge as praelector of physiology at Trinity College. This praelectorship was instituted largely under the advice of Huxley and was the foundation of the now famous Biological School of Cambridge. Langley attended Foster's early lectures, which stimulated him to adopt a scientific career. After taking a "first class" in the natural sciences in 1874, Langley began research at once. In 1877 he was elected to a fellowship at Trinity College, Cambridge. For some years he assisted Foster as a demonstrator and was made a university lecturer in 1884. In 1900 he became deputy to Foster, who had been professor of physiology since 1883, and in 1903 he succeeded him in the chair. He was elected a fellow of the Royal Society in 1883. He was president of the Neurological Society in 1893 and president of the physiologic section of the British Association in 1899. He took over from Foster the work of editing the *Journal of Physiology* in 1894 and became sole editor in 1907.

His first investigation, in 1875, was into the mutual antagonism of certain drugs on the heart and salivary glands. He established the differences in the action of the salivary glands in different animals and the changes produced in the gland cells, putting on firm basis the conception of a mesostate for enzyme secretion, which had been formulated by Heidenhain He extended his observations to the gastric glands, and was the first, in conjunction with his pupils Sewall and Edkins, to work out the relation of the cell granules to the formation of pepsin. He made a detailed investigation of the brain of a dog (shown at the International Medical Congress of 1881) from which a large part of the cortex had been removed by Goltz. With his pupil Grunbaum he worked out the degenerating tracts in another of Goltz' dogs (shown at the International Physiological Congress in 1889). In that year he made an important discovery. Gaskell, his colleague at Cambridge, had been investigating the connection of the sympathetic with the cerebrospinal system and was working out the origin of the visceral fibers of the cranial and sacral nerves. Langley discovered that nicotin paralyzed the sympathetic at the junction of the white ramus with the ganglion cell and that it could thus be determined which fibers end in a ganglion and which pass through it. Langley's researches on the visceral nervous system, which occupied some thirty years, taken in conjunction with Gaskell's work, form one of the most important contributions to physiology emanating from the Cambridge school. He found that epinephrin had its usual stimulating effect after postganglionic fibers had degenerated. Elliott, who had obtained similar results, had put forward the important conception that epinephrin acts, not on the muscle substance or on the nerve endings but on some substance at the neuromuscular junction. Langley worked out this conception and fully established it, calling the substance "receptive substance."

Street Accidents in London

The increase of street accidents due to the development of motor traffic continues at an alarming rate. The latest figures for London show that 207 persons were killed in the street in the quarter ending September 30. All but thirteen of these accidents were caused by motor vehicles. Omnibuses were responsible for thirty-two, tramcars for nine, cabs for eight, private motor cars for fifty-three, motorcycles for thirty-one, and trade and commercial vehicles for sixty-one. Horse drawn trade and commercial vehicles were responsible for nine deaths and pedal cycles for four. Accidents to persons or property during the quarter, including those already given, numbered 23,696. The largest totals were: private motor cars, 6,834; trade and commercial vehicles (mechanical), 4,748; pedal bicycles, 3,385; motorcycles, 2,588; omnibuses, 2,030; horse-drawn trade and commercial vehicles, 1,887; tramway cars, 1,174, and cabs, 965.

The Early Treatment of Mental Disease

The National Council for Mental Hygiene, which was formed with the object of improving the mental health of the community, has been making a careful census of the means available for the early treatment of mental disease. To this end, questionnaires were sent out. The first were addressed to the deans of the thirty-five medical schools. Of these, twenty-seven sent replies. It was found that, in twenty-four of the schools, instruction to students in early treatment of mental diseases was given by lectures or clinical demonstrations. Two schools provided clinical clerkships, and one school research laboratories and scholarships. Thirteen schools hold only one course of lectures or demonstrations annually, and one school affords a course only in alternate years. Twelve schools give postgraduate teaching, and in six of these the students are allowed to participate in this instruction. A second questionnaire was addressed to 237 large hospitals and infirmaries. Only twenty claimed to provide any special facilities for the treating of mental disorders. Of these twenty, fourteen provide an outpatient clinic and six admit inpatients to their wards. Only three, however, set aside beds for the mental cases. The council concludes that this analysis betrays the utter inadequacy of the arrangements for the treatment of patients suffering from uncertified and uncertifiable mental disorders. For the huge majority of the population there are no facilities for treating worth talking about and practically nothing is done to relieve the great suffering associated with mental disorder until such time as the patient becomes certifiable and is sent to a mental hospital—a result that could be prevented in many cases if it were not for the present apathy in dealing with the situation. A third questionnaire was addressed to the matrons of 316 Poor Law infirmaries. Twenty-five of these replied that lectures on functional nervous disease were given to nurses under training, and twenty-one stated that nurses obtained clinical experience in the care of such disorders. The committee concludes that the training of nurses in the treatment of mental disorders is much below the minimum desirable, especially having regard to the large number of patients whose needs demand nursing of this particular kind.

Death from Inability to Digest Food

A curious case of death from inability to digest food, for which no cause could be found, has been the subject of a coroner's inquest. The deceased was a girl, aged 19 years, a milliner's apprentice. Her mother stated that since the age of 16 she had gradually declined in health and had lost flesh. She was seen by physicians and specialists at the hospitals, but they could find nothing wrong with her. She had no appetite and never wanted to sleep. On going to bed, she collapsed and became unconscious. She died next morning without regaining consciousness. Dr. M. Bronte, government pathologist, made a postmortem examination. He said that the body was a skeleton and weighed just under 4 stone (25.4 kg.). He could find no disease, but all the organs were wasted and much below normal size. He attributed death to starvation due to the girl's inability to digest food. He had known one other case of a similar character.

Ill Effects of the Threat of an Irish Medical Register

The injury likely to be inflicted on the Irish medical schools by the project of the Free State government to establish a separate medical register in Ireland has been pointed out in previous letters. Official figures supplied by Trinity College, Dublin, show that the average number of first year students in the medical school for the ten years before the war was sixty-six. After demobilization the number rose, but in 1921, it fell back to sixty-one, about its prewar average. This year the number has fallen to thirty-five, the lowest since 1892. This great drop is regarded by the college authorities as largely, if not entirely, due to the proposal to establish a separate Irish medical register.

A Physician's Fatal Cigaret

The East Cheshire coroner held an inquest on a physician, aged 27, who had lighted a cigaret in his motor car, which immediately took fire and ran 70 yards enveloped in flames. The physician leaped out with his clothes ablaze. Shopkeepers rushed with rugs to extinguish the flames. His arms, head, neck and back were terribly burned, and he died the next day. A motor engineer stated at the inquest that the union on the pipe leading from the gasoline tank was leaking, and the ignition of a match in a covered car might cause fire. The coroner, in recording a verdict of accidental death, commented on the recklessness of lighting a cigaret when the physician, as he understood, knew that there was a leakage of gasoline.

PARIS

(From Our Regular Correspondent)

Nov. 2, 1925.

Skin Reactions Provoked by Certain Wines in Gouty Persons

At times gouty subjects manifest extraordinary sensibility toward provocative influences, especially toward certain foods. Certain physicians have upheld the idea that anaphylaxis might play a part in acute articular gout. Others, however, take the view that attacks of articular gout must be associated with shock. In a recent article, Widal, Abrami and Joltrain have reported the results of their researches of the last three years on the hypersensibility of gouty persons to wine, particularly the red wines of Burgundy, and the skin reactions provoked by these wines in gouty patients. To be sure, this method of approach does not indicate whether the skin reaction reveals anaphylaxis or idiosyncrasy. Furthermore, a patient will sometimes react positively to a substance to which, clinically, he does not appear hypersensitive. But, with these reservations, the skin reaction is valuable and is the only method of revealing hypersensibility to specific wines. It is manifestly impossible to require every patient to drink, experimentally, a certain quantity of each of the existing wines. Moreover, very few patients, forewarned of the danger of precipitating an attack of gout, are willing to submit to the experiment.

Widal and his collaborators, using various wines, experimented with nineteen subjects with typical articular gout. These patients belonged to widely different classes of society and their ages ranged from 30 to 72. Extracts of various foodstuffs were likewise employed in effecting skin reactions. These tests resulted thus: Of the nineteen subjects, in three the reactions were intense; in three they were negative, and in thirteen they were positive but weak (slight white elevation presenting a puffy appearance about the scarification, reaching its maximum at the end of half an hour, being surrounded at times by an erythematous zone and disappearing usually after an hour).

This reaction, be it never so slight, is produced only by certain wines that exert a peculiarly irritating effect on the skin of gouty patients. It is entirely lacking in a control scarification in which no wine is injected, or in a scarification into which a drop of nonirritating wine is introduced. Usually nothing similar is seen in normal subjects or in persons affected with diseases other than gout. Of thirty-three subjects free from gout, Widal and his collaborators secured positive results in only five. These five were no doubt exceptional reactions such as occur, from time to time, in other skin test methods in which widely different antigens are employed. The results were negative in seven patients with urticaria and four patients with asthma, who, by reason of their affections, were particularly interesting control subjects.

In the presence of gout, then, the skin reactions were positive in sixteen out of nineteen patients, whereas they were negative in thirty-nine out of forty-four cases in which gout was absent. The intensity of the reaction does not seem to depend on the activity or the latency of the disease. It is interesting that in gouty patients wines that induce positive skin reactions are principally red Burgundy wines, although positive reactions were secured with certain other wines. It would be interesting to know what the substances are that, in a liquid as complex as wine, elicit this evidence of hypersensibility. Although the authors have been unable to determine the exact nature of this substance, it is quite evident that these properties are analogous to those that give wines their so-called soil qualities. These properties of wines do not correspond to any geographic distribution. While it is true that all the red wines of Burgundy produce a positive reaction, the white wines of the same region have no effect. Our taste tells us that there is nothing in common between the red wines and the white wines of Burgundy. The conclusion seems reasonable, therefore, that in every wine the taste and the sensitizing capacity are due to the same substance.

Address of Professor Chagas at the Pasteur Institute

Last week, a special meeting was held in the large amphitheater of the Pasteur Institute. Prof. Carlos Chagas, director of public health, head of the Oswaldo Cruz Institute (founded at Rio de Janeiro after the model of the Pasteur Institute of Paris), and the representative of Brazil on the health council of the League of Nations, lectured on Chagas' disease, the form of trypanosomiasis occurring chiefly in animals, in Brazil. In a short address of welcome, Dr. Roux recalled the work of Oswaldo Cruz, and referred to the important part played by the institute that bears his name in the crusade against yellow fever, which has been nearly eradicated from Brazil. In return, Dr. Chagas expressed the homage and gratitude of his country to the scientists of the Pasteur Institute of Paris, at which Oswaldo Cruz spent some time as a student. The Brazilian professor then described the symptoms of the disease that he was the first to detect. He held out the hope that the disease would be completely eliminated fairly soon.

Ethylene Anesthesia

M. Papin of Paris has employed, for the last two years, ethylene anesthesia in all his urologic operations, and, at the recent French congress of urology, he gave an account of his experiences. He has completely abandoned chloroform and ether anesthesia, and rarely uses local, regional or intraspinal anesthesia. A perfect general anesthetic is one that is effective and harmless. For a period of two years, Papin used nitrous oxid, which has the advantage of being much less dangerous than chloroform and ether, but it is not so effective an anesthetic as ethylene. After a number of trials on animals, the author began, together with Ambard, to use ethylene anesthesia in operations on man. After having used ethylene in 700 cases, he affirms that it presents no disadvantages. It is mixed with oxygen in much the same manner as nitrous oxid; its use requires a certain amount of experience. Before ethylene is administered, a subcutaneous injection of pantopon is given, which suppresses the period of excitation, commonly slight at the worst. Anesthesia is complete in from one to twelve minutes—an average of five minutes. The awakening is without agitation or vomiting, as a rule. While vomiting does occur in a small percentage of cases, it is very slight. Ethylene does not affect the functioning of the kidneys. With the aid of this anesthetic, Papin has been able to operate on patients presenting rather marked general symptoms of nephritis, bad pulmonary conditions and somewhat grave cardiac lesions—in fact, in many groups of patients that he never would have risked subjecting to chloroform or ether. Ethylene is, however, highly inflammable, and, when mixed with oxygen, explodes with a loud detonation on coming in contact with a flame; but one needs only to take the same precautions as with ether in order to prevent accidents. Aside from this objection, Papin regards ethylene as the best of the anesthetics used in urology.

RIO DE JANEIRO

(From Our Regular Correspondent)

Oct. 15, 1925.

Symmetric Cyanoderma

Dr. Moreira da Fonseca has reported to the National Academy of Medicine what he considers a case showing a new syndrome, related to the sympathetic system. He has suggested the name of symmetric cyanoderma. His case was in a boy, 14 years old, who had been treated for malaria. The physical development was normal, but the skin exhibited symmetrically distributed dark blue spots. These did not yield to pressure, nor did exercise produce any change in them. No secretory or trophic changes were noted, nor modifications in sensitiveness or temperature. The spots were located in the face, where they seemed darker, the chin, ears, trunk, breasts, arms and legs, but always exhibiting a symmetrical arrangement. After a short period, they became yellowish red, the change starting in the center. The shape varied, being either round, elliptic or annular, and occasionally forming large patches resembling old ecchymoses. There were no syphilitic stigmas. The examination of the different systems showed no abnormality whatsoever.

After three weeks, the patient was cured of malaria. The blue spots soon disappeared after administration of epinephrin *per os*. In Dr. Fonseca's opinion, the case is interesting on account of the probable malarial etiology. The relation of the sympathetic system seems evident from the symmetrical distribution and the therapeutic results secured with epinephrin.

Sperm Cultures and Autovaccines in the Diagnosis and Treatment of Chronic Gonorrhea

Dr. Belmiro Valvêrde has just submitted to the National Academy of Medicine the results of his studies on sperm cultures in the diagnosis, and autovaccines in the treatment, of gonorrhea. The use of sperm cultures rather than urethral discharge for diagnostic purposes seems rational. The sperm traverses the whole lower genito-urinary tract, and during the orgasm, the muscles contract, thus furthering the evacuation of the urethral glands, prostate and seminal vesicles. In twenty-two cases of chronic urethritis, with prostatitis and other complications, Dr. Valvêrde examined the sperm. In only one case the gonococcus was found. Other organisms, such as staphylococci, pseudodiphtheric bacilli, enterococci, streptococci, were isolated in the others. After using autovaccines in large doses, the results were not conclusive. There were many improved cases, but no real permanent cure.

The available statistics show many contradications. Taking as a guide for diagnosis the presence of gonococci in the sperm cultures, different authors have secured these results: Lebreton, 82 per cent.; Guépin, 70 per cent.; Maille, 94.2 per cent.; Giscard, 50 per cent.; Boeckel, 51 per cent.; Bilger, 44.61 per cent.; Nogués and Durupt, 80 per cent.; Chabanier, Barbellion and Lebert, 47 per cent.; Giscard, quoted by Janet, 36 and 18 per cent.; Valvêrde, 8.3 per cent.; Janet and Debains, 100 per cent. failures.

As to the use of autovaccines in treatment, the same uncertainty prevails: Lebreton, 98 per cent. cures; Bilger, 91 and 93 per cent.; Le Fur, 80 per cent.; Chabanier, Barbellion, Lebert, 54 per cent.; Maringer, Lacat, Oraison always observed complete failures; Valvêrde, 100 per cent. of failures. These enormous differences are apparently caused by centering attention on the gonococcus, to the neglect of the other organisms, which also are responsible for chronic urethral lesions.

Surgical Instrument Sterilization

Dr. Edilberto de Campos submitted to the Medical and Surgical Society a method for sterilizing surgical instruments. His idea is to keep them in dated trays containing glycerine and a phenol preparation. The advantage of the method is that it secures sterilization without oxidation and obviates the bother and trouble of boiling.

BUENOS AIRES

(From Our Regular Correspondent)

Oct. 20, 1925.

Rosario Medical School

The new building of the Rosario Odontological School was opened, October 18. It is undoubtedly the best equipped of its kind in this country. On the same date diplomas were delivered to the first graduates from the medical school. A fund of 70,000 pesos (about $25,000) was granted to the school for the purchase of radium to be devoted to the treatment of indigent patients.

Medical Congresses

Three congresses will be held here simultaneously in 1926. One of them, the third National Medical Congress, will be presided over by Prof. C. Bonorino Udaondo. The chief subject for discussion will be malaria. A number of prominent foreign guests will attend. The fourth South American Conference on Hygiene, Microbiology and Pathology will be presided over by Prof. E. Áraoz Alfaro, president of the national department of public health.

Argentine Medical Association

The Argentine Medical Association, which only recently passed the 1,000 mark in membership, has now the following branches, which meet regularly in its offices: internal medicine, biology, neurology and psychiatry, pathologic surgery, urology, otorhinolaryngology, ophthalmology, pediatrics, nepiology, phthisiology, radiology and physical therapy. The only national societies still holding out are those of surgery, obstetrics and gynecology—but these meet in the Medical Association quarters—and the Cancer Society, which has offices of its own.

Foreign Professors

The services of Prof. C. Nicolle, director of the Pasteur Institute of Tunis, have been engaged by the national department of public health. Professor Nicolle has already given three lectures on typhus fever, relapsing fever and atypical infections. He will conduct a postgraduate course in the Bacteriologic Institute and will make a survey of the Northern provinces.

Prof. G. Fichera of Pavia has given a course on cancer in the Buenos Aires Medical School. The national health department and the Surgical Clinic Institute are planning to engage his services for the period of one year, with an option on them for another year.

The chair of physiology in the Rosario Medical School has become vacant through the resignation of Prof. O. M. Pico. Through some unexplainable reason, the directing board has decided to fill the position with an Italian professor, instead of choosing one of the younger men in the country.

Hospital Improvements

The Rawson Hospital addition, costing about 3,000,000 pesos (about $1,200,000), is about to be completed. This institution will now have room for 1,300 patients. As soon as this construction is out of the way, work will be started on the Ramos Mejía Hospital, at a similar cost. The Salaberry Hospital will soon have new pavilions of surgery, maternity, gynecology and pediatrics, and new administration offices, costing about 340,000 pesos ($136,000). The Pirovano Hospital is being remodeled at a cost of 800,000 pesos ($320,000), and 200,000 pesos ($80,000) has been allotted to the Alvear Hospital for a dispensary, a surgical pavilion, a nurses' home and a children's building. The funds available for hospital modernization amount to 18,000,000 pesos ($7,380,000).

Trachoma

The antitrachoma work is being pushed in the Santiago del Estero province. Some areas have shown 30 per cent. infection. A special trachoma station will be opened at Quebracho Coto.

Typhus Fever

Typhus fever has never made its way inland. In September, however, quite a number of deaths were reported, from the Andes region, at Tecka and Languineo. On investigation, it was found the disease had been imported over the Chilean border.

Malaria

Dr. G. Strode of the Rockefeller Foundation has returned to Brazil, after coming to an understanding with the national department of public health as to the malarial campaign. Dr. Nelson Davis has already opened an office at Tucumán, and the work will start at Concepción. The International Health Board will be in full charge of the work, the Argentine government at first bearing half the expense. The percentage will gradually increase until in about five or six years the whole cost of operation will be borne by the Argentine people. Next year, the foundation will help in hookworm work in the Corrientes province.

NETHERLANDS

(From Our Regular Correspondent)

Oct. 15, 1925.

Quinin Prophylaxis in Malaria

In the crusade against malaria through prophylaxis by quinin the findings seem contradictory. In malarial regions therapeutic doses of quinin are necessary to adequate prophylaxis. Dr. Nicolai recently published his results in a group of laborers in the Dutch East Indies to whom he applied the Ziemann treatment. This is based on the belief that injection of 1 gm. of quinin maintains resistance for four days, since quinin may be recovered from the urine for three successive days. Nicolai, however, noted absence of quinin after thirty-eight hours in 20 per cent. of the cases and after forty-eight hours in the majority of the cases. He could not see that either the number of new cases or the relapses was notably decreased.

The Antimalaria Crusade

The official antimalaria crusade has been replaced by an antimalaria organization that appeals chiefly to the people.

The only official body in the field is the scientific commission on malaria. These two organizations are continuing their work—both are interested in larvicidal measures during hibernation. Swellengrebel has published a study based on the dissection of more than 10,000 anopheles mosquitoes. He found the majority infected from September to December, and again in February. He found few or none infected in summer, although May, June and July are the months in which the incidence of malaria is the greatest. This is because in autumn and winter the anopheles mosquitoes remain in the buildings, where they are found if they are infected, whereas in summer they leave the buildings to deposit their eggs and probably do not return, although many newly hatched insects take their places.

After-Care Colony for the Tuberculous

A movement is on foot to establish in Friesland an after-care colony which shall look after tuberculous patients coming from a sanatorium until they can again fill a place in society. A patient just out of a sanatorium will find it difficult to reestablish himself in his former occupation or to take up some new work with sufficient energy to succeed. It is to such convalescents that an after-care colony renders service.

Council on Medical Ethics in the East Indies

A council on medical ethics will be established in the Dutch East Indies, composed of three physicians and two jurists. The chairman of the council will be appointed by the government together with the medical association and the head of the army. The ethical council must familiarize itself with both the civil and the military problems of medicine.

The Three Hundredth Anniversary of the Hospital at Zutphen

The hospital at Zutphen celebrated this year its tricentenary, the institution having been established in 1625 to furnish hospital accommodations for the poor of the city. On this occasion, the management published an historical volume. The origins of the institution are somewhat obscure, but its activities are mentioned at an authentic date previous to 1625. One of the buildings still in existence was completed in 1441, but it was not until 1625, in connection with an epidemic of plague, that the various services were centralized.

Antiscarlatina Serums

Aldershoff has just published in the *Nederlandsch Tijdschrift voor Geneeskunde* a detailed account of researches on antiscarlatina serums. Using strains of *Streptococcus hemolyticus-scarlatinae* secured from America, the author prepared, at the serologic institute at Utrecht, a scarlet fever toxin, the effect of which he has observed during the first days of the disease, the period most favorable for the Dick test. The results of his trials confirm and supplement the findings of Dick. In a family of ten children at Leyden, all of whom were subjected to the Dick test, five reacted positively and had scarlet fever; five negatively and did not have it.

In order to secure an antiscarlatina serum with the toxin prepared at Utrecht, the author followed the method that is employed in the preparation of antidiphtheritic and antitetanic serums. He describes his successive trials in this direction until he secured a serum which, when injected subcutaneously into two children suffering from grave scarlet fever, in quantities of 40 and 22 c.c., respectively, caused a marked fall of temperature. The author thinks that efforts to secure a more powerful antitoxic serum by concentration should be continued. The serum prepared by Dick has, apparently, equally favorable effects on the course of scarlet fever. The method of preparation is the same, but the author thinks that heating the serum at 56 C., as carried out at Utrecht, protects the patient against serum accidents.

Fumigation and Disinfection

The official journal *Nederlandsch Staatscourant* contains a new order with reference to fumigation and disinfection by hydrocyanic acid (prussic acid), the toxic compounds of cyanogen, or any substances that may form toxic compounds of cyanogen. These substances may be used only under competent direction. Furthermore, there must be ready for use (1) a sufficient number of effective gas masks, and (2) equipment for first aid. After disinfection of bedding, clothing, carpets, etc., by hydrocyanic acid, they should be taken into the open air, dried if necessary, and beaten. Foodstuffs that have been subjected to hydrocyanic acid must have all traces of it removed. The residues of the products used to generate the toxic gases must be removed with care, in order to eliminate danger for man or animals. No room subjected to the action of hydrocyanic acid, or into which toxic gases may have penetrated, may be used until the air charged with gas has been expelled and the use of suitable reagents has shown that the air is free from toxic substances.

The Potency of Serums and Vaccines

Regulation of the sale and use of serums and vaccines has been made the subject of a ministerial decree, of which a brief résumé follows: Potency of serums in circulation must be tested every six months. If a lot no longer meets the requirements, the entire lot must be condemned and recalled from circulation. Notice of such recall, with the mention of the lot number, must be made in the *Staatscourant,* the *Nederlandsch Tijdschrift voor Geneeskunde* and the *Pharmaceutisch Weekblad.* The period during which serums may be expected to meet the requirements is three years, provided they are kept at a low temperature.

An Historical Medical Exhibit

On the fiftieth anniversary of the foundation of the White Cross of North Holland, an exhibit of everything pertaining to medicine and the art of healing, including paintings, documents and manuscripts, was organized at Alkmaar. Many museums lent a number of treasures for the exhibit. There was a portrait of Van Ostade representing the physician in his laboratory; there were works by Franz Hals and by Rembrandt, and a choice collection of engravings.

A Distinction Conferred on Professor d'Herelle

The Royal Academy of Sciences, at a recent special session, bestowed the Leeuwenhoek medal on Professor d'Herelle in recognition of his researches on the bacteriophage. Professor Eijkman of Utrecht delivered the presentation speech and decorated the scientist with the medal.

Child Morbidity and Mortality

At the convention held at Utrecht on the twenty-fifth anniversary of the foundation of the Society of the Green Cross, the object of which is the development of public hygiene and the improvement of domiciliary care of children, Dr. Sanden of Rotterdam in his address made a comparative study of child morbidity and mortality in the cities and rural districts of the Netherlands. Forty years ago, the morbidity and mortality rate was much higher in the cities; at present the reverse is true. However, the more detailed examination of the statistics shows that in some rural communes the rate is much lower than in others. There is a possibility, therefore, of improving the situation in the rural communes, especially since the principal factor in the mortality is summer dysentery. In the curves published by the city of Amsterdam the customary apex due to summer dis-cases has been conspicuously absent in recent years (since 1905). Through more rigorous discipline, it is thought possible to eliminate the apex from the curves of other regions. This is the task that the Society of the Green Cross proposes to accomplish.

BERLIN

(From Our Regular Correspondent)

Oct. 24, 1925.

Infantile Paralysis, Meningitis and Dysentery in 1924

In 1924, there were 507 cases of epidemic infantile paralysis in Germany, as against 550 in 1923. From January to June the number of cases ran: 17, 18, 18, 11, 14 and 13; during the four following months there was an increase (62, 69, 74 and 116 cases), but for November and December only 59 and 36 cases, respectively, were reported. The incidence was highest in Mecklenburg-Schwerin (2.62 per hundred thousand population). Lübeck, Hessen and Baden follow with 2.42, 2.00 and 1.42 per hundred thousand population, respectively. In the other states or principalities the rate fell below 1 per hundred thousand. No cases were reported from Wurttemberg, Bremen, Lippe, Waldeck and Schaumburg-Lippe. In Prussia there were 318 cases, the incidence having been highest in the government district of Magdeburg (92 cases).

In 1924, there were in Germany 749 cases of cerebrospinal meningitis, as compared with 1,149 in 1923. During the first seven months, the number of cases were: 72, 75, 77, 88, 74, 56 and 72. In August, the number dropped to 42 and rose again the two following months to 51 and 56, respectively; November showed then the lowest incidence of any month of the year (36), while in December 50 cases were recorded. Hamburg had the highest incidence, 3.00 per hundred thousand population.

In 1924, Germany recorded 5,845 cases of dysentery, as against 8,449 in 1923. The number of cases occurring during the first five months and during the last two months was much higher than during the warm weather months. From January to May inclusive there were 295, 280, 312, 317 and 302 cases, respectively, while November showed 265 and December 300 cases. During the five-month period from June to October, there were respectively 429, 1,002, 1,125, 748 and 470 cases. Hamburg showed the highest incidence, 16.24 cases per hundred thousand.

The Changeability of Bodily Characters—a Chapter in Ethnography

Professor Kruse, the director of the hygienic institute of the University of Leipzig, discussed recently the changeability of bodily characteristics of the various races of mankind. Kruse casts doubt on the "axiom" that race characteristics are permanent. To begin with, it is not true of height. Conditions of living have exerted a marked influence. Observations on emigrants from Germany are here significant. Whereas in Europe Germans are 0.75 cm. shorter than Englishmen, this difference disappears when both have emigrated to North America and live under the same conditions. Possibly the changeability of the cephalic index, which is usually regarded as the most important racial character, is just as significant as the modifications in the height index. Hitherto, scientists have for the most part explained regional differences or differences in various epochs in a given race as due to selection or to admixture of foreign strains, minimizing the influence of modes of living. The investigations of Kruse show that in German territory and under German modes of living the cephalic index of the Jews has gradually approached that of the Germans. Kruse's researches on the relative head size in Germans who have emigrated from one province to another are also significant. Persons who—the same as their parents—were born in regions characterized by prevailingly long-headed or short-headed inhabitants, as the case may be, have an average cephalic index of 81.3 and 84.1, respectively. Marked variations, however, are noted under different conditions: 1. Persons who themselves were born among long-headed people but whose parents came from short-headed stock have a cephalic index of 82.5. 2. Other persons who were born in regions where people are short headed but whose parents came from long-headed forebears have an index of 83.4. 3. Persons one of whose parents came from long-headed and the other from short-headed stock have an index of 81.5, if they themselves were born in a region of long-headed inhabitants, and an index of 83.7, if they were born among short-headed people. From these facts it is apparent that with us in Germany the cephalic index is influenced more by the place of birth than by hereditary tendencies. Kruse admitted that he was not prepared to explain this, but the facts compel us to be cautious about using the cephalic index as a racial characteristic. Boas discovered no changes in the descendants of the Jews and the southern Italians who had immigrated to North America. But the fact that in Europe Jews in northern latitudes have a lighter complexion than those living farther south indicates that here modifications may be brought about during the course of centuries. The fact that the complexions of European races are darker as we go south affords further proof that climate exerts an effect on the pigmentation of the skin in Europeans. We need not ascribe this to selective influences but may assume a direct effect of the climate. The shape of the face may be the most important racial characteristic. If we consider the forehead, the nose and the chin, we can separate at once Caucasians from the Mongolian and the negroid races. The profile is much more pointed in the former than in the latter. A subdivision, however, of the Caucasian or European race cannot be effected on the same basis. The frontal view is better adapted for the differentiation of various types of faces than is the profile. But the frontal facial aspects seem to be affected by regional influences similar to the cephalic index. These findings confirm Kruse in his conviction that the widespread teachings with respect to the characterization and distribution of European races should be viewed very skeptically.

Official Warning as to the Overcrowding of the Medical Profession

The Prussian minister of science, art and education issued, August 21, the following warning to prospective students of medicine:

> It is well known that, even before the Great War, the medical profession in Germany was overcrowded. During the war, a large number of medical students who had not completed the full course were given their diplomas in order that the needs of the army might be met. Other students were allowed to take their final examinations on completion of shortened courses. After the war, many German physicians returned to Germany from foreign countries, the German colonies, the ceded territories and the occupied regions. Many physicians of German extraction came into Germany from the neighboring countries. An unusually large number of former army officers took up the study of medicine. These facts serve to explain why Germany today, with a population six millions less, has a much larger number of physicians than the old German empire. Another important factor lies in the circumstance that, owing to the financial depression that has prevailed since the war, the incomes of wide circles of the middle classes have become so reduced as to compel them to seek protection against sickness by becoming members of the various health insurance societies, thus depriving the physicians of many of their best paying private patients. The principal revenue of the medical profession today is derived from the members of the social insurance organizations: from the *Krankenkassen,* the industrial insurance societies and the provincial insurance associations. But, as the result of the war and postwar conditions, particularly the inflation of the paper currency, the finances of these societies and associations have become *badly shattered.* On the other hand, the number of days' illness among the insured, as the result of undernutrition and the consequent reduced resistance of the population, has increased to no inconsiderable extent. At the present time, the insured members of the aforementioned organizations are scarcely able to pay the physicians larger fees than they are now paying. Medical study with its large number of obligatory lectures and its six-year course is the most expensive of all academic professions, whereas the *prospects* for young physicians are at present about the worst imaginable. For the next few years, therefore, students are strongly urged to renounce their plans to take up the study of medicine.

Marriages

Chester Leonard Oppegaard, Crookston, Minn., to Miss Helen Hagley of Duluth, in September.

Lyle Steele Booker to Miss Katherine Helen Amrhein, both of Durham, N. C., November 10.

Julius Boniman Stokes to Miss Jennie Beatrice Scotten, both of Harwood, Mo., October 17.

Karl Walter Anderson, Minneapolis, to Miss Crystal Justus of Hopkins in September.

Carl G. Swendseen to Miss Helen Mae McCune, both of Minneapolis, in September.

Joseph Maurice Fruchter to Miss Sara B. Benn, both of Philadelphia, October 20.

Harold E. Wilmot to Miss Dorothy Frisch, both of Litchfield, Minn., in September.

George M. Tangen to Miss Ruth Victor, both of Canby, Minn., in September.

Cecil J. Watson to Miss Joyce Patterson, both of Minneapolis, in September.

Adam M. Smith to Miss Helen Carrigues, both of Minneapolis in September.

Aaron B. Yasinow to Miss Rose Lucille Makoff, both of Cleveland, June 23.

Deaths

Morgan Preston Moorer ⊕ Biltmore, N. C.; Medical College of the State of South Carolina, Charleston, 1901; served in the M. C., U. S. Army, during the World War; at one time health officer of Buncombe County; formerly connected with the U. S. Veterans' Hospital, No. 60, Oteen; aged 46; died, November 3, at a sanatorium near Asheville, following a long illness.

James Davidson McDowell ⊕ Vincennes, Ind.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1894; formerly county health officer and mayor of Vincennes; aged 51; died, November 2, of a bullet wound, presumably self-inflicted.

Franklin Powell Turner, Cleveland, Miss.; Memphis (Tenn.) Hospital Medical College, 1901; member of the Mississippi State Medical Association; served in the M. C., U. S. Army, during the World War; aged 46; died, November 9, of heart disease.

Dewey Everett Westerman, Welch, W. Va.; University of Tennessee College of Medicine, Memphis, 1924; intern, Welch Hospital, No. 1; aged 27; was killed, October 31, when the automobile in which he was driving plunged over an embankment.

David Emory Shy ⊕ Sedalia, Mo.; University of Kansas School of Medicine, Rosedale, 1907; president of the Pettis County Medical Society; on the staff of the Missouri, Kansas and Texas Railroad Hospital; aged 46; died, November 5.

Ralph W. Murray, Jansen, Neb.; Northwestern Medical College, St. Joseph, 1892; member of the Nebraska State Medical Association; aged 57; was killed, October 31, when the automobile in which he was driving was struck by a train.

Thomas Francis Joyce, Lawrence, Mass.; Medical Department of the University of the City of New York, 1883; member of the Massachusetts Medical Society; on the staff of the Lawrence Tuberculosis Hospital; aged 68; died, October 29.

Andrew Jefferson Nelson, Seattle; Medical Department of Columbian University, Washington, D. C., 1893; member of the Washington State Medical Association, and the Medical Society of Virginia; aged 64; died, November 1.

Louis Stinson, Jacksonville, Fla.; University of Maryland School of Medicine, Baltimore, 1911; member of the Florida Medical Association; formerly county physician; aged 43; died, November 1, at Hosford, of pneumonia.

William Allen Martin, Sapulpa, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1915; member of the Oklahoma State Medical Association; aged 47; died, November 5, of heart disease.

George Martin Harrison, Meshoppen, Pa.; University of Michigan Medical School, Ann Arbor, 1875; member of the Medical Society of the State of Pennsylvania; aged 74; died, September 28, of heart disease.

James Lawton Hiers ⊕ Savannah, Ga.; University of Georgia Medical Department, Augusta, 1889; formerly on the staff of the Park View Sanitarium; aged 60; died, November 8, of heart disease.

John H. Troutt, Madison, Ga.; University of Georgia Medical Department, Augusta, 1889; member of the Medical Association of Georgia; member of the board of education; aged 57; died, November 1.

William Carr ⊕ New York; Bellevue Hospital Medical College, New York, 1872; also a dentist; aged 83; died, October 15, at Centre Moriches, N. Y., of bronchopneumonia and diabetes mellitus.

John Alvia Briley, Nolensville, Tenn.; Vanderbilt University Medical Department, Nashville, 1888; University of Nashville Medical Department, 1890; aged 76; died, October 31, at Antioch.

Henry D. Sadler, Rison, Ark.; University of Arkansas Medical Department, Little Rock, 1891; member of the Arkansas Medical Society; aged 63; died, October 28, of heart disease.

William Macon Smiley, Salem, Va.; Medical College of Virginia, Richmond, 1901; formerly connected with the Baptist Orphanage; aged 57; died, November 5, following a long illness.

Henry Bolin Allen, Americus, Ga.; University of Georgia Medical Department, Augusta, 1902; member of the Medical Association of Georgia; aged 47; died, November 8, of pneumonia.

Thomas M. Smoot, Woodbury, Tenn.; University of Tennessee College of Medicine, Memphis, 1906; member of the Tennessee State Medical Association; aged 54; died in October.

John James Rectenwald ⊕ Mount Oliver, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1895; aged 52; died, November 3, at St. Francis' Hospital, Pittsburgh.

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Jacob U. Schnetzler, Toledo, Ohio; Northwestern Ohio Medical College, Toledo, 1885; aged 66; died, October 24, of anemia.

John B. Gordon, Tiffin, Ohio; Eclectic Medical Institute, Cincinnati, 1878; aged 78; died, November 5, of cerebral hemorrhage.

Knut O. Hoegh, Minneapolis; University of Christiania, Norway, 1869; aged 81; died, in October, following a long illness.

Louis Eaton Jenkins, Auburn, N. Y.; Syracuse University College of Medicine, 1905; aged 45; died, August 5, of acidosis.

Edward V. Anderson, Woodstock, Ill.; Rush Medical College, Chicago, 1871; aged 77; died, October 31, at Riverside, Calif.

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Lewis A. Rader, Spencer, W. Va. (years of practice); aged 82; died, November 2.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

DIABESAN

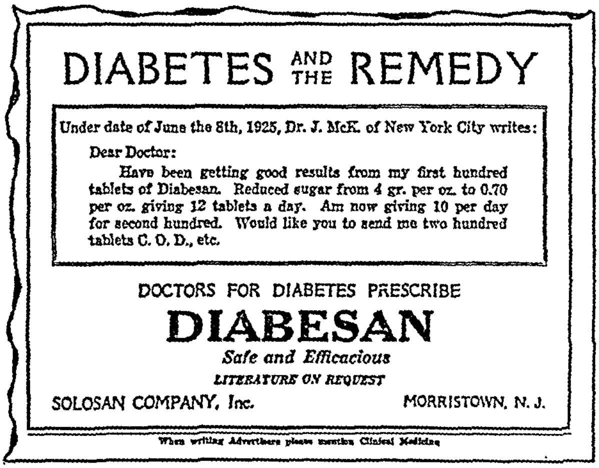
Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report. W. A. PUCKNER, Secretary.

Diabesan is the name of a preparation claimed to be "indicated in all cases of diabetes and glycosuria," and marketed by the Solosan Company of Morristown, New Jersey. According to an advertising circular issued by the Solosan Company, Diabesan contains as its chief therapeutic agent:

> ". . . the trypsin of dead yeast cells, 'not dried yeast cells,' cells which are no longer able to cause fermentation, and therefore do not affect the carbohydrate food; but on the other hand in contrast to all other yeast preparations digests albumen and reduces it to an animo-body [sic] where it can be absorbed and used in rebuilding wasted tissues."

The claim is made that Diabesan "restores to the human system the faculty to digest both albumen and carbohydrates and makes use of same in the economy of the human body."



DIABETES AND THE REMEDY

Under date of June the 8th, 1925, Dr. J. McK. of New York City writes:

Dear Doctor:

Have been getting good results from my first hundred tablets of Diabesan. Reduced sugar from 4 gr. per oz. to 0.70 per oz. giving 12 tablets a day. Am now giving 10 per day for second hundred. Would like you to send me two hundred tablets C. O. D., etc.

DOCTORS FOR DIABETES PRESCRIBE

DIABESAN

Safe and Efficacious

LITERATURE ON REQUEST

SOLOSAN COMPANY, Inc. MORRISTOWN, N. J.

When writing Advertisers please mention Clinical Medicine

The evidence offered to support this claim is contained in a paper written by A. H. Werner, president of the Solosan Company, and circulated as a "Reprint from the *Medical Standard*, May, 1925," entitled "The Rational Treatment of Diabetes." This paper contains a number of fallacies that vitiate the rather intangible and very poorly written argument. The first of these is that in diabetes it is difficult for albuminous foods to be properly digested. There seems to be no ground for this assumption, which forms the underlying premise of the author's argument. An equally questionable assumption is the further claim that if protein be properly digested, all the woes of the diabetic will disappear and that the trypsin contained in Diabesan will accomplish this result. Dead yeast presumably contains a small amount of tryptic ferment. But it is doubtful that it survives passage through the stomach; and, in any event, it is unlikely that yeast contributes materially to the aid of protein digestion under the conditions of alimentation that ordinarily prevail in patients with diabetes. It would therefore appear that the claims for Diabesan are irrational and unscientific.

Since the assumptions on which the claims for Diabesan are based have no more to support them than the published work of A. H. Werner, president of the Solosan Company, the Bureau of Investigation was asked for a report on his medical qualifications. The Bureau reported as follows:

"According to our records, August Henry Werner claims to have been graduated in medicine in Germany. He is said to have come to the United States as agent for the manu-

Marriages

Chester Leonard Oppegaard, Crookston, Minn., to Miss Helen Hagley of Duluth, in September.

Lyle Steele Booker to Miss Katherine Helen Amrhein, both of Durham, N. C., November 10.

Julius Boniman Stokes to Miss Jennie Beatrice Scotten, both of Harwood, Mo., October 17.

Karl Walter Anderson, Minneapolis, to Miss Crystal Justus of Hopkins in September.

Carl G. Swendseen to Miss Helen Mae McCune, both of Minneapolis, in September.

Joseph Maurice Fruchter to Miss Sara B. Benn, both of Philadelphia, October 20.

Harold E. Wilmot to Miss Dorothy Frisch, both of Litchfield, Minn., in September.

George M. Tangen to Miss Ruth Victor, both of Canby, Minn., in September.

Cecil J. Watson to Miss Joyce Patterson, both of Minneapolis, in September.

Adam M. Smith to Miss Helen Carrigues, both of Minneapolis in September.

Aaron B. Yasnow to Miss Rose Lucille Makoft, both of Cleveland, June 23

Deaths

Morgan Preston Moorer ⊕ Biltmore, N. C.; Medical College of the State of South Carolina, Charleston, 1901; served in the M. C., U. S. Army, during the World War; at one time health officer of Buncombe County; formerly connected with the U. S. Veterans' Hospital, No. 60, Oteen; aged 46; died, November 3, at a sanatorium near Asheville, following a long illness.

James Davidson McDowell ⊕ Vincennes, Ind.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1894; formerly county health officer and mayor of Vincennes; aged 51; died, November 2, of a bullet wound, presumably self-inflicted.

Franklin Powell Turner, Cleveland, Miss.; Memphis (Tenn.) Hospital Medical College, 1901; member of the Mississippi State Medical Association; served in the M. C., U. S. Army, during the World War; aged 46; died, November 9, of heart disease.

Dewey Everett Westerman, Welch, W. Va.; University of Tennessee College of Medicine, Memphis, 1924; intern, Welch Hospital, No. 1; aged 27; was killed, October 31, when the automobile in which he was driving plunged over an embankment.

David Emory Shy ⊕ Sedalia, Mo.; University of Kansas School of Medicine, Rosedale, 1907; president of the Pettis County Medical Society; on the staff of the Missouri, Kansas and Texas Railroad Hospital; aged 46; died, November 5.

Ralph W. Murray, Jansen, Neb.; Northwestern Medical College, St. Joseph, 1892; member of the Nebraska State Medical Association; aged 57; was killed, October 31, when the automobile in which he was driving was struck by a train.

Thomas Francis Joyce, Lawrence, Mass.; Medical Department of the University of the City of New York, 1883; member of the Massachusetts Medical Society; on the staff of the Lawrence Tuberculosis Hospital; aged 68; died, October 29.

Andrew Jefferson Nelson, Seattle; Medical Department of Columbian University, Washington, D. C., 1893; member of the Washington State Medical Association, and the Medical Society of Virginia; aged 64; died, November 1.

Louis Stinson, Jacksonville, Fla.; University of Maryland School of Medicine, Baltimore, 1911; member of the Florida Medical Association; formerly county physician; aged 43; died, November 1, at Hosford, of pneumonia.

William Allen Martin, Sapulpa, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1915; member of the Oklahoma State Medical Association; aged 47; died, November 5, of heart disease.

George Martin Harrison, Meshoppen, Pa.; University of Michigan Medical School, Ann Arbor, 1875; member of the Medical Society of the State of Pennsylvania; aged 74; died, September 28, of heart disease.

James Lawton Hiers ⊕ Savannah, Ga.; University of Georgia Medical Department, Augusta, 1889; formerly on the staff of the Park View Sanitarium; aged 60; died, November 8, of heart disease.

John H. Troutt, Madison, Ga.; University of Georgia Medical Department, Augusta, 1889; member of the Medical Association of Georgia; member of the board of education; aged 57; died, November 1.

William Carr ⊕ New York; Bellevue Hospital Medical College, New York, 1872; also a dentist; aged 83; died, October 15, at Centre Moriches, N. Y., of bronchopneumonia and diabetes mellitus.

John Alvia Briley, Nolensville, Tenn.; Vanderbilt University Medical Department, Nashville, 1888; University of Nashville Medical Department, 1890; aged 76; died, October 31, at Antioch.

Henry D. Sadler, Rison, Ark.; University of Arkansas Medical Department, Little Rock, 1891; member of the Arkansas Medical Society; aged 63; died, October 28, of heart disease.

William Macon Smiley, Salem, Va.; Medical College of Virginia, Richmond, 1901; formerly connected with the Baptist Orphanage; aged 57; died, November 5, following a long illness.

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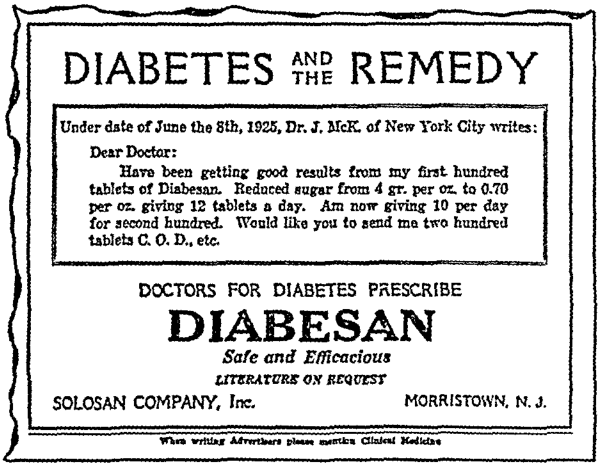

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"According to our records, August Henry Werner claims to have been graduated in medicine in Germany. He is said to have come to the United States as agent for the manufacturers of 'Iodeol' and to have formed the Werner Chemical Company to exploit that product. As president of that company he submitted a paper on Iodeol in 1914 which bore the name 'A. H. Werner, M.D., Graduate of the University of Strassburg, Alsace.' A search through the lists of medical graduates of the University of Strassburg covering the years 1882 to 1912 failed to reveal the name of A. H. Werner.

"In 1914 a copy of the *International Brief*, a publication issued by a New York quack, contained, in addition to a full page advertisement of Iodeol, an advertisement of one A. H. Werner, described as 'Professor Psychotherapy and Biology of the Old Physio-Medical College.' This 'college' has since been exposed as a crude diploma mill. The *International Brief* purported to be the official organ of the 'International Alliance of Physicians and Surgeons' of which an A. H. Werner was given as one of the 'vice-presidents'!

"In 1915 one A. H. Werner was advertising a 'consumption cure' in New York newspapers, and later was convicted of practicing without a license and fined. In 1916 the name of A. H. Werner appears as 'second vice-president' of the 'American Association of Progressive Medicine,' an organization that was exposed in The Journal, Sept. 19, 1925. In the same year A. H. Werner seems to have been 'medical advisor' for the Bachelet Medical Apparatus Co. In this capacity he applied for advertising space in The Journal, but the advertisement was rejected. In 1917 and again in 1918 Werner is said to have taken the New York State medical examinations and to have failed each time.

"In 1920 one A. H. Werner was president of the Rhinol Co., Inc., exploiting a 'Specific in Hay Fever.' The advertising of Rhinol was bolstered up by a 'Reprint from *Charlotte Medical Journal*, December, 1919,' credited to 'A. H. Werner, M.D.' In 1921 the name of A. H. Werner appears as a member of the board of trustees of the 'Allied Medical Associations of America,' which was exposed in The Journal, July 5, 1919. In 1924 the name of A. H. Werner was listed as one of those who would present a paper at the 'American Association for Medical Physical Research,' which was dealt with in The Journal, Sept. 19, 1925."

The biographical files of the American Medical Association—the most complete extant and based on official data—fail to show that there is any other A. H. Werner, calling himself a physician, than August Henry Werner.

From the Bureau's report it appears that A. H. Werner, president of the Solosan Company, is not a properly qualified medical authority. The case reports appended to the "Reprint" on Diabesan are quite unconvincing. They are so meager and incomplete that nothing is proved either way. The claims for Diabesan are not in harmony with accepted facts, nor supported by acceptable evidence; nor does there appear to be any evidence that trypsin—or a preparation such as Diabesan, said to contain it—has any value in the treatment of diabetes.

Correspondence

THE ACIDIFICATION OF GASTRIC CONTENTS IN DETERMINING NEUTRAL RED EXCRETION

To the Editor:—In Winkelstein and Marcus' recent article "The Excretion of Neutral Red into the Human Stomach" (The Journal, October 31, p. 1397) they reported that they failed to recover neutral red in the gastric contents of some cases of achylia gastrica other than pernicious anemia. According to the method they used, "the patients presented themselves with a fasting stomach; the Rehfuss tube was passed, and 2 c.c. of a 1 per cent. solution of neutral red (Ehrlich's neutral red was freshly dissolved in distilled water and boiled) was injected intramuscularly in the gluteal region. The gastric contents were aspirated every two minutes until the dye appeared as a definite pink discoloration." In our recent publication (The Journal, September 12, p. 794) we pointed out the fallacy of looking for pinkish coloration in cases with anacidity, unless the contents are brought to a hydrogen ion concentration sufficiently acid to give the characteristic red-pink reaction of neutral red in acid solutions. We feel that this accounts for the relatively large number of cases of achylia reported in the literature which failed to excrete the dye. We have seen repeatedly patients with anacidity who had yellowish gastric contents after the intramuscular injection of neutral red, which strongly suggested regurgitated bile. However, on the addition of glacial acetic acid bringing the solution to the acid side of litmus, a definite reddish coloration occurred. As Winkelstein and Marcus do not mention the employment of this precaution, we are wondering whether this might not account for their failure to recover the dye in certain cases of achylia gastrica other than pernicious anemia. A series of cases have been studied since the group reported in our publication; we have never recovered neutral red in a patient with pernicious anemia and have not failed to recover it in every other case of anacidity studied.

Winkelstein and Marcus' results are of course not strictly comparable with ours because of two factors in technic: First, appearance time was noted by them on a relatively empty stomach; we instilled water every fifteen minutes. Second, they gave 2 c.c. of a 1 per cent. solution intramuscularly (dosage of 20 mg.); we gave 4 c.c. (40 mg.).

Percy B. Davidson, M.D., Boston.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

VERIFICATION OF GRADUATION

To the Editor:—I see by The Journal, October 24, under the heading "California June Examination" in the passed and failed list of candidates from foreign universities an asterisk after the names of some of them which means "not verified by the American Medical Association." What do you mean by this? What requirements are necessary for the American Medical Association to verify graduation? M.D.

Answer.—For graduates of medical schools in the United States and for some medical schools abroad, the American Medical Association has official data by which the graduation of all candidates appearing before state licensing boards is immediately verified. In all reports of state board examinations a statement "graduation not verified" is made in regard to the few instances in which such data are not available. This statement is published without prejudice to the physician concerned, and it is understood that the state licensing board has itself secured directly from the medical school a verification of the candidate's credentials.

TREATMENT OF SCABIES

To the Editor:—Will you kindly publish the formula for the Danish treatment of scabies as used at the Massachusetts General Hospital? M.D.

Answer.—This is answered in the article by Arthur M. Greenwood, "The Danish Treatment of Scabies," The Journal, Feb. 9, 1924, p. 466:

1. One kilogram of sublimed sulphur is mixed with 2 kg. of 50 per cent. solution of potassium hydroxid (as free from water as can be obtained). Gentle heat is applied until reaction ceases and the solution becomes clear. When the process is complete, one should be sure that the sulphur is in excess to a slight degree.
2. Petrolatum, 225 gm., is mixed with wool fat, 225 gm., without heat.
3. To this mixture is added 375 gm. of the solution of sulphur and potash mentioned above.
4. To 40 gm. of 20 per cent. sodium hydroxid solution is added 28 gm. of zinc sulphate. The mixture is agitated thoroughly until reaction ceases, poured on filter paper, and washed thoroughly; then the washed precipitate is added to the foregoing.
5. Liquid petrolatum is added to obtain a total weight of 1,000 gm.
6. Five grams of oil of bitter almond is added to mask the somewhat disagreeable odor of hydrogen sulphid.

The directions for use of the ointment as given in the original article by Lomholt (*Lancet* 2:1251 [Dec. 18] 1920) and summarized by Greenwood are, briefly, as follows:

The patient receives an ordinary cleansing bath, dries himself thoroughly, and afterward rubs the whole of his body, except his head, carefully with the ointment. The ointment must cover all the skin, but hard rubbing is neither required nor desirable. The patient ought then to wait for a quarter of an hour to give the ointment time to get into the skin; after this he can go to bed. The next day, at about the same hour, he receives a bath and fresh underclothing, and the treatment is finished. Meanwhile, all his clothes have been disinfected. We have followed these directions in our cases, in addition, insisting on the disinfection of the bedding.

Greenwood says, further, that dermatitis has occurred in patients who have used an ill prepared ointment or have used a good ointment longer than directed. Failures may occur unless directions are followed and unless linen is disinfected and other members of the family are cured of the disease.

VOICE PRODUCTION

To the Editor:—I want to write a paper on "Voice Production." I am interested most particularly in discussing the character of the instrument or instruments which the voice box is like. Could you cite me some articles or reprints on the subject?

J. M. Quick, M.D., Muncie, Ind.

Answer.—The following is a list of references to books on the subject:

Browne, Lennox; and Behnke, Emil: Voice, Song and Speech, pp. 69-74, New York, G. P. Putnam's Sons.
Mills, Wesley: Voice Production in Singing and Speaking, pp. 102, 140, etc., Philadelphia, J. B. Lippincott Company, 1906.
Von Meyer, Georg Hermann: The Organs of Speech, p. 190, New York, D. Appleton & Co., 1884.
Aikin, W. A.: The Voice, p. 89, New York, Longmans Green & Co., 1910.
Howard, John: The Physiology of Artistic Singing, p. 104, etc., Boston, John Howard, 1886.
Voorhees, I. W.: The Hygiene of the Voice, New York, the Macmillan Company, 1923.

PREVENTING NAUSEA FROM MORPHIN

To the Editor:—Is there known to therapeutists anything which may be incorporated with a dose of morphin and atropin to be given hypodermically that may prevent nausea and vomiting following, as is frequently the case? In one instance a specialist gave a dose, so I have been informed, and he told the patient, "I will give something with it to prevent nausea," and nausea in that one instance did not result, although it followed the next dose taken, given by another physician a few days after the one given by the specialist.

John F. Chandler, M.D., Oregon, Mo.

Answer.—It is stated that the administration of morphin dissolved in 2 c.c. of 50 per cent. sterile magnesium sulphate solution, preferably with the addition of procain, 2.5 per cent., increases the activity of morphin by from 50 to 100 per cent., so that a smaller dose has a more prolonged effect and the disagreeable after-effects are diminished. Scopolamin by its greater psychic effect is probably a better antagonistic to the disagreeable after-effects of morphin than is atropin, as is shown by the well established value of the former in lessening the withdrawal symptoms of the morphinist under treatment. The psychic value of the direct suggestion "I will give something with it to prevent nausea," increased in its potency possibly by the fact that a "specialist" said it, will also have to be considered in this case.

PHENOLSULPHONEPHTHALEIN TEST

To the Editor:—In carrying out the color comparison in the phenolsulphonephthalein test for kidney function, with specimens of urine collected in a cystoscopic examination there is often blood in the specimen. This interferes with an accurate color comparison. If a method for removing blood and hemoglobin from urine has been given in The Journal would you kindly give me the issue number?

B. F., M.D.

Answer.—Sidney C. Burwell and Chester M. Jones, "The Removal of Bile and Blood from the Urine," The Journal, Aug. 6, 1921, p. 462, write as follows: "Phenolsulphonephthalein solution (1 c.c.) is injected into the deltoid muscle in the usual manner, and the urine collected after the usual interval of two hours and ten minutes. This specimen of urine is diluted up to 500 c.c. with tap water. To 20 c.c. of this diluted urine is added 20 c.c. of a saturated alcoholic solution of zinc acetate, which precipitates out bilirubin and hemoglobin. Red cells are carried down with the precipitate. Filtration yields a clear solution, now free from bile pigments and hemoglobin. Twenty cubic centimeters of this clear filtrate is made alkaline with 5 c.c. of saturated sodium hydroxid solution to bring out the full color of the dye, and made up to 40 c.c. with tap water. This solution is clear and is read directly against a known standard solution of phenolsulphonephthalein. In order to correct for dilution, the percentage reading is multiplied by 2."

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

Alabama: Montgomery, Jan. 12. Chairman, Dr. S. W. Welch, Montgomery.

Arizona: Phoenix, Jan. 5-6. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.

Colorado: Denver, Jan. 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

Delaware: Wilmington, Dec. 8-9-10. Pres. Med. Coun., Dr. Henry W. Briggs, 1026 Jackson St., Wilmington.

District of Columbia: Jan 12. Sec., Dr. Edgar P. Copeland, Apt. 104, Stoneleigh Court, Washington, D. C.

Hawaii: Honolulu, Jan. 11. Sec., Dr. G. C. Milnor, 401 So. Beretania St., Honolulu.

Idiana: Indianapolis, Jan. 12. Sec., Dr. W. T. Gott, 421 State House, Indianapolis.

Kentucky: Louisville, Dec. 8-10. Sec., Dr. A. T. McCormack, 532 W. Main St., Louisville.

Louisiana: New Orleans, Dec. 10-12. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

Maryland: Baltimore, Dec. 8-11. Sec., Reg. Bd., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore. Sec., Homeo. Bd., Dr. J. S. Garrison, 517 Old Orchard Rd., Baltimore.

Minnesota: Minneapolis, Jan. 5-7. Sec., Dr. Thomas S. McDavitt, 734 Lowry Bldg., St. Paul.

North Dakota: Grand Forks, Jan. 5. Sec., Dr. George M. Williamson, Grand Forks.

Ohio: Columbus, Dec. 2-4. Sec., Dr. H. M. Platter, Hartman Hotel Bldg., Columbus.

Oregon: Portland, Jan. 5-7. Sec., Dr. N. C. Coe, 1208 Stevens Bldg., Portland.

Rhode Island: Providence, Jan. 7. Sec., Dr. Byron U. Richards, State House, Providence.

Utah: Salt Lake City, Jan. 5. Director of Reg., Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

Virginia: Richmond, Dec. 8-11. Sec., Dr. J. W. Preston, 720 Shenandoah Life Bldg., Roanoke.

Washington: Olympia, Jan. 12. Sec., Mr. William Melville, 15 Insurance Bldg., Olympia.

Wisconsin: Madison, Jan. 12-14. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., La Crosse.

Wisconsin: Milwaukee, *Basic Sciences,* Dec. 18-19. Sec., M. F. Guyer, Madison.

Missouri June Examination

Dr. James Stewart, secretary of the board of health of Missouri, reports the written and practical examination held at St. Louis, June 23-26, 1925. The examination covered 14 subjects and included 123 questions. An average of 70 per cent. was required to pass. Of the 124 candidates examined, 115 passed and 9 failed. The following colleges were represented:

College	PASSED	Year Grad.	Number Passed
Northwestern University Medical School	(1922)	(1925)	2
Loyola University School of Medicine		(1918)	1
College of Physicians and Surgeons, Keokuk		(1897)	1
University of Kansas School of Medicine		(1910)	1
Johns Hopkins Univ. Med. Department	(1918)	(1921)	2
Harvard University		(1922)	1
St. Louis University School of Medicine		(1925)	55
Washington University School of Medicine		(1925)	45
Hahnemann Med. Coll. and Hosp. of Philadelphia		(1923)	1
Univ. of Pa. School of Medicine	(1924)	(1925, 2)	3
Meharry Medical College		(1925)	2
Marquette University School of Medicine		(1922)	1

College	FAILED	Year Grad.	Number Failed
College of Physicians and Surgeons, Chicago		(1910)	1
St. Louis University School of Medicine		(1925)	4
Washington University School of Medicine		(1925)	3
Ohio Medical University, Columbus		(1903)	1

Tennessee June Examination

Dr. Alfred B. DeLoach, secretary of the Tennessee Board of Medical Examiners, reports the written examination held at Memphis, Nashville and Knoxville, June 12-13, 1925. The examination covered 8 subjects and included 64 questions. An average of 75 per cent. was required to pass. One hundred and nineteen candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Tulane			81.3, 84
Johns			87.9
St. Lc			82.9, 88.1
University of			80.5
Columbia Univ			85.8
Jefferson Medi			86.4
Meharry Medical College		(1925)	78.8
79, 82, 82.3, 82.8, 83, 83.8, 83.9, 83.9, 84.4, 84.5, 84.6, 84.8, 85.3, 85.6, 85.8, 85.9, 86.1, 86.5, 89			

Nashville Medical College	(1901)	75
University of Tennessee College of Medicine 78.6, 79.5, 79.5, 79.6, 81.5, 81.5, 81.9, 82.5, 82.8, 82.8, 82.8, 83.1, 83.4, 83.5, 83.5, 83.5, 83.5, 83.8, 83.9, 84, 84.1, 84.3, 84.4, 84.6, 84.8, 84.8, 84.8, 84.9, 84.9, 84.9, 85, 85, 85.1, 85.4, 85.5, 86.1, 86.1, 86.3, 86.6, 86.9, 86.9, 86.9, 87.5, 87.6, 88.4, 88.6, 88.8, 89.5, 89.6, 90.6	(1925)	78.1
Vanderbilt University School of Medicine 82.5, 83.1, 83.1, 83.1, 83.1, 84.3, 84.8, 85, 85.1, 85.5, 85.6, 85.8, 85.9, 86, 86.1, 86.3, 86.3, 86.4, 86.4, 86.8, 86.8, 87.4, 87.5, 87.6, 87.6, 87.6, 87.6, 88, 88.1, 88.1, 88.4, 88.8, 88.9, 89.6, 89.6, 90.4, 91.8, 93	(1925)	81.6

Oklahoma April Reciprocity Report

Dr. James M. Byrum, secretary, Oklahoma Board of Medical Examiners, reports that 4 candidates were licensed by reciprocity and 4 candidates were granted reregistration certificates at the meeting held at Oklahoma City, April 14, 1925. The following colleges were represented:

College	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
Tulane University	(1915), (1923)	Louisiana
Eclectic Medical University, Kansas City	(1911)	Arkansas
University of Texas	(1915)	Texas

Book Notices

Alcohol in Medical Practice. With a Chapter on the Evolution of Medical Opinion. By Courtenay C. Weeks, M.R.C.S., L.R.C.P. Cloth. Price, 3 shillings 6 pence, net. Pp. 186. London: H. K. Lewis & Co., Ltd., 1925.

The author's extensive compilation of statistics on expenditures for liquor in British hospitals shows a marked reduction in the use of wines and spirits in the treatment of patients throughout the empire in every class of hospital. The figures also reveal the capricious way in which alcohol is ordered, some hospitals using but very little, and others taking care of the same class of cases using a considerable amount. These contrasts seem to "point to the fact that much of the prescribing of alcohol is based on caprice, idiosyncrasy and unscientific predilection of the responsible medical staff, rather than on great general principles." The author objects to the use of the word stimulant in connection with alcoholic beverages, because they are narcotics and not stimulants. Especially pernicious does the author consider the use made of alcohol in circulatory diseases and depression, in view of the fact that, excepting for the brief period of reflex stimulation, it is a depressant to the circulation rather than a stimulant. Indeed, he sees no clear cut indications whatever for the use of alcohol in medicine, and believes that, in view of the disastrous effect on society of the abuse of alcohol, physicians in eschewing its use in their practice plant their feet firmly on both moral and scientific foundations.

Die Praxis der Nierenkrankheiten. Von Prof. Dr. L. Lichtwitz, Aerztl. Direktor am Städt. Krankenhaus Altona. Fachbücher für Aerzte, Band VIII. Second edition. Cloth. Price, 15 goldmarks. Pp. 315, with 39 illustrations. Berlin: Julius Springer, 1925.

The lack of uniformity in nomenclature and classification constitutes a great difficulty in the clear understanding of the subject of diseases of the kidney. Since the time of Müller, who first introduced the term nephrosis, by which name tubular disease of the kidney was differentiated from glomerular disease, or nephritis, there has been a constant stream of additions of names and classifications. The name nephrosis and its varieties seem to be fairly well defined, but the controversy is still unsettled in the matter of nephritis and the mixed forms. For example, Lichtwitz prefers the term essential hypertension to that of Volhard, nephrosclerosis. There are many other diverging paths. It seems that the comparatively simple classification of Volhard and Fahr would be more acceptable than the longer one of Lichtwitz. The latter also includes orthostatic albuminuria, the kidney of passive congestion, and congenital lesions of the kidney in his table. Controversies, arising from an attempt to separate true nephrosis and nephritis of bacterial origin, and to determine whether vascular or tubular processes are primary in chronic conditions, are the cause of a good deal of academic discussion and waste of time and space in a monograph that is intended for the practitioner. To enumerate the differences of opinion between Volhard and the author would take many pages and would lead nowhere. The descriptions of such subjects as albuminuria, hematuria, edema, anuria, acute nephroses and nephritis, the various chronic nephritides and the use of diuretics are complete and excellent. Treatment is given in detail. A few points of interest might be mentioned: The author believes that the amount of albumin is no index of the extent of the renal lesion and that granular casts always indicate a severe degenerative lesion. This statement is open to debate. The functional tests of choice are the water tests, the determination of renal concentration power by the use of sodium chlorid and urea, and the determination of uric acid and urea in the blood. The objection to laying too great stress on the latter rests in the lack of knowledge as to how much of these bodies is retained in the tissues. No mention is made of the dye test, blood phosphates and guanidin. The thirst and hunger days of Volhard are used in the treatment of edema, and the methods espoused by von Noorden are given favorable comment. Of the diuretics, which he uses only occasionally, he gives favorable mention to novasural, in edema of cardiac decompensation; theobromin sodiosalicylate, because, in his opinion, of its direct action on the kidney; digitalis, and in some cases, thyroid extract. Dietary and physical methods, such as warm baths in preference to sweats, as recommended by Volhard, and light massage, are the first considerations. Great stress is laid on the use of sodium chlorid, as the ability to excrete this substance is one of the guideposts of treatment. He agrees with A. A. Epstein in advocating a high protein diet in the nephroses, and he allows moderate amounts, without eliminating meat entirely, in the chronic nephritides. Innumerable references, although the actual references are not given, are made to various authors. An English translation with the elimination of academic discussions should be of value to American physicians.

Development of Our Knowledge of Tuberculosis. By Lawrence F. Flick, M.D., LL.D. Cloth. Price, $7.50. Pp. 783. Philadelphia: The Author, 1925.

A survey of Dr. Flick's book suggests the subtitle "Medical History Made Easy"; the book is not a treatise on the historical development of tuberculosis, but a compilation of extensive translations and quotations from the writings of those men whose works are the milestones in this development. There are well chosen and complete quotations from Hippocrates, Galen and Aretaeus, from Sylvius, Morton, Bayle, Auenbrugger and Laënnec, from Villemin, Virchow and Koch. And the *dei minores,* too, are duly considered. Dr. Flick did not use the original Greek and Latin texts of the older writers, but the translations of Littré, Milligan, Kuhn and others. The author's own text, which connects the quotations, is scanty and not sufficient to convey a vivid picture of the historical development or of personalities and conditions. The comparative importance of the various authors is not emphasized except by the length of the abstracts. Consideration of investigations along lines closely connected with the subject of the treatise is missed throughout. The reactions that the all important investigations of Villemin and Koch created within their contemporaries are not adequately discussed. The book ends with the Sixth International Congress on Tuberculosis in Washington, in 1908. The period from 1884 is not well covered; the selection of material is highly subjective; names of prime importance are barely mentioned, whereas work of secondary significance is abstracted. Social agencies in the campaign against tuberculosis, the modern clinical investigations, artificial pneumothorax and the roentgen ray are not touched on at all. The institutional care of the tuberculous is, as it were, read by title. The period of the last twenty-five years is treated with much less care than the medieval times of grotesque therapeutics and bizarre theories.

Conduction, Infiltration and General Anesthesia in Dentistry. By Mendel Nevin, D.D.S., Oral Surgeon, Greenpoint Hospital, and P. G. Puterbaugh, M.D., D.D.S., F.A.C.D., Professor of Principles of Medicine and Anesthetics, Chicago College of Dental Surgery. Second edition. Cloth. Price, $6. Pp. 360, with 210 illustrations. Brooklyn: Dental Items of Interest Publishing Company, 1924.

This work is the same as that on "Conduction and Infiltration Anesthesia in Dentistry" by Nevin, reviewed in these columns a short time ago, to which has been added about thirty pages dealing with general anesthesia and analgesia as applied to dentistry by Puterbaugh, thus completing the general subject of anesthesia in dentistry.

Die uneheliche Mutterschaft. Eine sozial-gynäkologische Studie, zugleich ein Beitrag zum Problem der Fruchtabtreibung. Von Dr. Egon Weinzierl, 1. Assistent der deutschen Universitätsfrauenklinik in Prag. Paper. Price 4,20 marks. Pp. 79, with 14 illustrations. Berlin: Urban & Schwarzenberg, 1925.

Weinzierl views with anxiety the increasing incidence of criminal abortion in his part of the world, and adduces the results of a study of 500 cases of abortion which were treated in Wagner's clinic in Prague. The number of cases of abortion, from 1917 to 1923, totaled 3,038; i. e., one third of all admissions to the clinic. The situation is considered a great danger to the state, and, in fact, has reached the dignity of being a national problem. Previous to the war, the subject had received more or less attention, but since the armistice, the matter has become more urgent because of the increase in the number of abortions. The causes are largely economic: high living costs, poverty, unemployment and the psychology of the postwar period. The author recites that Soviet Russia has displayed leniency toward women who avoid maternity by illegal interruption of their pregnancies. This tendency on the part of the Soviet government has affected several of the neighboring states, so that the idea has become prevalent that women may resort to abortion without fearing prosecution; the abortionist likewise expects immunity. While the work presents nothing new to the student of economics or eugenics, the pamphlet is an interesting one. The picture of conditions obtaining among the forlorn women studied is a melancholy one; destitution and ignorance, betrayal and abandonment, all are ancient factors accompanying the evil. Weinzierl points out that the woman far advanced in her pregnancy is usually cared for in maternity hospitals, but no attention is given her in the early months of gestation. The early period, he states, is the dangerous one; it is the time when the unfortunate girl, not yet awake to the instincts of motherhood, resorts to the abortionist, or takes her own life; it is the period of desperation and greatest unhappiness. As a remedy, Weinzierl suggests the compulsory reporting of all pregnancies. He would appoint a curator for each woman, who should serve as adviser and protector, who should care for the child to the extent of seeing that it is properly housed and cared for, and who should see that the man responsible for the pregnancy is compelled to contribute to the support of mother and child. This suggestion is interesting, but, we fear, utterly impracticable. Further, he suggests that in the case of married women, the curator should be the husband; as the husband too often demands the abortion, this suggestion is hardly tenable. In all cases of contemplated abortion, the patient should be referred to a court consisting of medical, legal and sociological members; this court should pass on the propriety of the proposed step. Weinzierl would allow interruption for tuberculosis, syphilis, idiocy, epilepsy and heart disease; also, when conception follows a criminal attack. The author recommends that all illegitimate children should be institutionalized in view of the high mortality obtaining among such infants removed from the maternity hospital by the mother. Ignorance and neglect are responsible for the deaths. The results obtained under the operation of the "six months' law" in Maryland strongly refute the author's contention on this point. This law forbids the separation of the mother and her child for the first six months of the infant's life. Before the enactment of this law, one in four illegitimate infants died; since then one in twelve has died within the six month period. Weinzierl has written a very interesting and instructive monograph on phases of illegitimacy, which will be of value to the physician and the sociologist.

Medicolegal

Restrictions on Physicians of Prohibition Acts

(Lambert v. Yellowley et al. (U. S.), 4 Fed. R. (2d) 915)

The United States Circuit Court of Appeals, Second Circuit, in upholding the validity of the national prohibition acts as they affect the right of a medical practitioner to prescribe spiritous or vinous liquors in the treatment of disease, says that the fact may be noted that whether or not whisky, wine or beer has a therapeutic value in the treatment of disease is a very much disputed question in the medical profession. In 1917 the American Medical Association, which has a membership of 150,000 physicians, passed a resolution, discouraging the use of alcohol as a therapeutic agent (which resolution is quoted in a footnote to the court's opinion). It is impossible for the court to say as a matter of law that the limitation placed on physicians in prescribing liquor as a remedy for disease is not fairly adapted to the end of protecting the people of the United States against the evils which result from the use of intoxicating liquors. It was for Congress, and not the courts, to determine whether it was necessary or advisable to permit these liquors to be prescribed at all by physicians, and, if to be prescribed, to fix the quantity that may be prescribed at any one time or within a fixed period. A person has an inherent right to life, and in order to maintain it a right to eat and drink. But the right to drink liquors which are intoxicating, the state or the United States may take away, and in order to do so effectively the government may take away the right to drink certain liquors containing alcohol sufficient in amount to produce intoxication. That much is settled by the decisions of the courts; and for the same reason which leads the law-making power of a state or of the United States to prohibit the use of liquor containing a less amount of alcohol than is required to make it intoxicating, the law-making power may restrict the physician as to the amount of such liquor he can prescribe to his patient in a given period. The court cannot say that a physician's right to prescribe alcohol in the treatment of disease is inherent, and cannot be regulated or controlled by the law-making power of the state. The proposition is unsupported by authority and is unsound in principle.

Detention in Hospital for Unpaid Bill

(Gadsden General Hospital v. Hamilton (Ala.), 103 So. R. 553)

The Supreme Court of Alabama says that plaintiff Hamilton had been in the defendant's hospital for about three weeks, during which time she had undergone an operation for exophthalmic goiter. At the end of that period she desired to go home, but was told that she could not leave the hospital until her bill was paid. Under these conditions and in this manner she was detained from 9 a. m. until about 8 p. m. of the same day, when she was sent home in charge of a nurse. The overwhelming weight of the evidence was that no threat was made; that the plaintiff was not locked in her room, and suffered no wrong or indignity, except that she was told she could not leave until her bill was paid; that she passed the period of her detention quietly on her bed in her room, the door of which was open, she being detained—as the jury found, and as it was authorized to find under the evidence—merely by force of the defendant's command that she should not go until her bill was paid. That the plaintiff suffered a wrong for which she should be compensated must, in the circumstances, be conceded. But the jury acquitted the defendant of malice. The plaintiff's wrong, then, must be referred to the defendant's misapprehension of the propriety and the right of the situation presented—at least malice could not be predicated of what it did. It could not be doubted that the plaintiff was sick and nervous at the time of her detention, and this fact was due to be taken into consideration in the assessment of compensatory damages; but the court feels assured, on consideration of the expert medical testimony, that the nervousness, the excitement when at work, and the "nightmares" from which she suffered after her return home, were the result of her disease, not of any violence or the wrong done by the defendant or its agents. She recovered a judgment for damages, the amount of which is not stated by the supreme court, but which it holds was excessive, attributable to the jury's mistaken estimate of the proprieties of the case. In these circumstances, the court holds that the damages should be reduced to a reasonable maximum, which it places at $1,500, with interest added from the date of the judgment.

Requirement of Physician's Certificate Reasonable

(Home Beneficial Ass'n. v. Lomax (D. C.), 4 Fed. R. (2d) 292)

The Court of Appeals of the District of Columbia says it appeared that plaintiff Lomax held an insurance policy which provided that the stipulated benefit should commence from the date when the physician's written notice of the prescribed disability, given on forms provided by the association, was received at the office of the association; that as evidence of the association's liability for weekly benefits it required a physician's certificate on its own blanks at the end of each week of incapacity. For a short period the plaintiff was under the charge of a physician, who furnished a certificate on which the plaintiff recovered the benefits allowed him under the policy. But shortly thereafter he had a relapse, when, it was alleged, he was disabled from the performance of his duties, and was confined to his home, but was not under the supervision of a physician. On recovering from his indisposition, he notified the association, which refused payment. It was contended that the provision of the policy was applicable only when there was an attending physician; that, in the absence of an attending physician, the notice might be given by the insured, as was done in this case. But the court thinks that the contract would not admit of that construction. The requirement of a physician's certificate in all cases was not an unreasonable one. It was for the protection of the association against being defrauded, and the language of the contract was sufficiently clear to require such a certificate in every instance. The plaintiff was presumed to know and understand the terms and conditions of the contract, and was chargeable with any damage he might sustain as the result of his failure to comply with those conditions. The court thinks, therefore, that the terms of the contract in this particular were sufficiently clear and express to require its strict enforcement.

Opium an Illegitimate Commodity

(Yee Hem v. United States (U. S.), 45 Sup. Ct. R. 470)

The Supreme Court of the United States, in affirming a judgment of conviction of defendant Yee Hem of the offense of concealing a quantity of smoking opium after importation, with knowledge that it had been imported in violation of the Act of 1909 as amended in 1914, says that the authority of Congress to prohibit the importation of opium in any form and, as a measure reasonably calculated to aid in the enforcement of the prohibition, to make its concealment with knowledge of its unlawful importation a criminal offense, is not open to doubt. By universal sentiment, and settled policy as evidenced by state and local legislation for more than half a century, opium is an illegitimate commodity, the use of which, except as a medicinal agent, is rigidly condemned. Legitimate possession, unless for medicinal use, is so highly improbable that to say to any person who obtains the outlawed commodity, "since you are bound to know that it cannot be brought into this country at all, except under regulation for medicinal use, you must at your peril ascertain and be prepared to show facts and circumstances which rebut, or tend to rebut, the natural inference of unlawful importation, or your knowledge of it," is not such an unreasonable requirement as to cause it to fall outside the constitutional power of Congress. Every accused person, of course, enters on his trial with the presumption of innocence. But that presumption may be overcome, not only by direct proof, but, in many cases, when the facts standing alone are not enough, by the additional weight of a countervailing legislative presumption. The point that the practical effect of the statute creating the presumption is to compel the accused person to be a witness against himself may be put aside with slight discussion. The statute compels nothing. It does no more than to make possession of the prohibited article prima facie evidence of guilt. It leaves the accused entirely free to testify or not as he chooses.

No Duty to Provide Treatment But Must Pay for It

(Koviacs v. Edison Portland Cement Co. (N. J.), 128 Atl. R. 542)

The Supreme Court of New Jersey says the complaint stated that, owing to the negligence of the defendant, the pumps in its quarry where the plaintiff worked did not function, and, as a result of his working in water of from one to two feet deep and of a character dangerous to health, he became ill and one of his legs became diseased so that an amputation was necessary. Another paragraph of the complaint alleged that, although the defendant was well aware of the sick and diseased condition of the plaintiff, the defendant carelessly and negligently failed to provide him with any medical assistance or other means of being cured. The defendant moved to have that paragraph stricken out, and its motion is granted. In a common-law action for negligence such as this, although an employer must answer to an employee in damages for all loss proximately resulting, including physicians' and surgeons' charges, yet in the absence of contract, there is no duty on the part of an employer to provide medical assistance or other means of being cured to an ill and diseased employee, even though the illness or disease arose from the negligence of the employer.

The Ear Not a "Member" of the Human Body

(Travelers' Ins. Co. v. Albin (Ga.), 127 S. E. R. 804)

The Court of Appeals of Georgia, Division No. 1, in reversing a judgment which affirmed an award, by the industrial commission, of compensation for the loss of hearing of one ear, says that it was insisted that the ear is a member of the human body, and that the employee who had lost the hearing of one ear was entitled to recover compensation under Section 32 (r) of the workmen's compensation act of Georgia, which section provides for the "loss of a member" and "for partial loss of, or for partial loss of use of, a member." This court cannot agree with that contention. Even if the loss of hearing in one ear could be considered the loss of an ear, the word "member" does not, in contemplation of the statute referred to, embrace the ear. Consequently the injured employee could not recover for the loss of, or partial loss of, the use of an ear as a "member."

Society Proceedings

COMING MEETINGS

American Pharmacological Society, Cleveland, Dec. 28-31. Dr. E. D. Brown, University of Minnesota, Minneapolis, Minn., Secretary.
American Physiological Society, Cleveland, Dec. 29-31. Dr. W. J. Meek, Science Hall, Madison, Wis., Secretary.
American Society for Experimental Pathology, Cleveland, Dec. 28-30. Dr. E. B. Krumbhaar, Philadelphia General Hospital, Philadelphia, Sec'y.
American Society of Biological Chemistry, Cleveland, Dec. 28-30. Dr. D. W. Wilson, University of Pennsylvania School of Medicine, Philadelphia, Secretary.
District of Columbia, Medical Society of, Washington, D. C., Dec. 2. Dr. C. B. Conklin, 500 Medical Science Bldg., Washington, D. C., Sec'y.
Federation of American Societies for Experimental Biology, Cleveland, Dec. 29-31. Dr. Walter J. Meek, Science Hall, Madison, Wis., Sec'y.
Isthmian Canal Zone, Medical Association of, Ancon, Jan. 19. Dr. David L. Robeson, Ancon Hospital, Ancon, Secretary.
Philippine Islands Medical Association, Manila, Dec. 16-19. Dr. Isabelo Concepcion, College of Medicine and Surgery, Manila, Secretary.
Porto Rico, Medical Association of, Coami, Dec. 14-15. Dr. R. M. Suarez, Box 314, Santurce, Secretary.
Radiological Society of North America, Cleveland, Dec. 7-11. Dr. Robert J. May, St. Luke's Hospital, Cleveland, Secretary.
Society of American Bacteriologists, Madison, Wis., Dec. 29-31. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.
Southern Surgical Association, Louisville, Ky., Dec. 15-17. Dr. Hubert A. Royster, 423 Fayetteville Street, Raleigh, N. C., Secretary.
Western Surgical Association, Wichita, Kan., Dec. 18-19. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Minn., Secretary.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Archives of Internal Medicine, Chicago

36: 447-592 (Oct. 15) 1925

*Blood and Symptomatic Changes Following Intravenous Administration of Variety of Agents and Solutions. P. J. Hanzlik, F. De Eds and M. L. Tainter, San Francisco.—p. 447.

Lipoid Partition in Blood in Health and in Disease. B. L. Oser and W. G. Karr, Philadelphia.—p. 507.

*Congenital Intracardiac Fistulas. E. Holman, Cleveland.—p. 516.

*Use of Urea as Diuretic in Advanced Heart Failure. J. H. Crawford and J. F. McIntosh, New York.—p. 530.

*Diseases of Liver. IV. Functional Tests in Cases of Carcinoma of Liver and Biliary Tract. C. H. Greene, C. S. McVicar, W. Walters and L. G. Rowntree, Rochester, Minn.—p. 542.

*Nutritional Changes in Exophthalmic Goiter. C. C. Sturgis and J. A. Greene, Boston.—p. 561.

*Glycemia as Guide in Treatment of Diabetes Mellitus. W. H. Nadler and G. Tukey, Chicago.—p. 579.

*Pancreatic Function. I. Quantitative Determination of Pancreatic Enzymes. E. Hollander and J. M. Marcus, New York.—p. 585.

Blood Changes Incident to Intravenous Injections.—This study by Hanzlik et al. showed that intravenous injections, in dogs, of small and large doses of the following agents and solutions caused *definite and important changes in arterial* blood, accompanied, as a rule, by disturbances in physiologic functions: 10 per cent. sodium chlorid solution, 85 per cent. sucrose solution, 50 per cent. dextrose solution, 18 per cent. urea solution, 0.1 per cent. agar solution, 6 per cent. and 25 per cent. acacia solution, 5 per cent. gelatin solution, 3 per cent. barium sulphate suspension, 0.5 per cent. fullers' earth suspension, 5 per cent. copper sulphate solution, 9 per cent. calcium chlorid solution, 21.7 per cent. sodium iodid solution, 50 per cent. sodium salicylate solution, 0.33 per cent. arsphenamin solution and 5 per cent. peptone solution.

Congenital Intracardiac Fistulas.—In studies on peripheral arteriovenous fistula and on the patent ductus arteriosus, a very intimate interrelationship between increased minute volume flow and cardiac enlargement was demonstrated by Holman. Additional corroborative information as to this interrelationship was obtained from a study of such developmental anomalies of the heart as accompany patent interventicular septum, patent foramen ovale, cor triloculare, and the associated abnormalities of pulmonary and aortic stenosis. In the presence of these intracardiac fistulas, the volume flow of blood through the heart is unequally distributed among the several chambers, and, theoretically, the developmental response in these chambers should be commensurate with the volume flow through them. Clinical evidence in favor of this view is provided by ten cases of congenital anomalies of the heart recorded in the literature.

Urea as Diuretic in Advanced Heart Failure.—Crawford and McIntosh gave urea in doses of from 30 to 60 gm. a day to eight patients with advanced heart failure; it was followed by a marked increase in urine volume. The drug was particularly useful in cases in which an adequate water excretion was not maintained after the edema fluid had been removed by other measures. In some cases it relieved the edema when other remedies had failed. The increase in urine output varied with the dose and followed closely the curve of urea excretion. With continuous administration, the daily urine volume was maintained at an almost constant level. The response after administration was rapid, but the effect passed off in a short time unless the dose was repeated. The changes in urine volume and in urea excretion were dependent on the concentration of the urea in the blood. In several of the cases there was a subnormal index of urea excretion which seemed ascribable to advanced heart failure. The index tended to improve with urea administration, along with a general improvement in the clinical condition. Toxic symptoms of any significance did not take place. From these observations it is suggested that urea is a useful diuretic in cases of heart failure with edema, *in which treatment of the* cardiac condition has failed to remove the edema or maintain an adequate water excretion.

Liver Function Tests in Liver Carcinoma.—The determination of the serum bilirubin and the phenoltetrachlorphthalein test, Greene et al. are convinced, promises to be of very definite assistance in the study of patients with abdominal carcinoma and suspected malignant disease of the liver. When extension of the malignant process to the liver is accompanied by jaundice, as from obstruction of the extrahepatic bile passages, it is direct evidence of a disturbance in the normal physiologic activity of the liver. In such cases functional tests and the determination of the serum bilirubin are of value in that they furnish a sensitive and quantitative means of studying the effects of the jaundice. The tests are of less value in differential diagnosis, for the jaundice dominates both the clinical picture and the laboratory findings. The jaundice associated with malignant disease in the liver is not to be differentiated by these tests from obstructive jaundice from any cause. It is in the study of patients with carcinoma involving the liver without jaundice that functional tests are of greatest value, particularly the phenoltetrachlorphthalein test. In the cases in which there was clinical evidence of malignant disease of the liver, confirmatory results were obtained by functional studies. In the absence of clinical evidence of hepatic involvement, the phenoltetrachlorphthalein test *may furnish the only evidence of the existence of metastatic nodules in the liver. Positive* tests are not obtained in all cases of metastatic involvement of the liver, for positive tests are a measure of the interference with the activity of the liver as a whole, and the latter is an organ with a large margin of safety. For this reason, however, positive tests when obtained become doubly significant.

Nutritional Changes in Exophthalmic Goiter.—The relation between the food intake, basal metabolism and body weight in patients with exophthalmic goiter is emphasized by Sturgis and Greene. From present observations, which are in accord with those made previously, it is concluded that *in order to maintain body weight while resting in bed, the food intake in a patient with exophthalmic goiter and an elevated metabolism must be at least from 75 to 100 per cent. greater than* the basal metabolism. A study of the histories of sixty-five patients with exophthalmic goiter indicated that although 88.5 per cent. of them had an appetite which was classified as ravenous, increased or normal, yet 86.5 per cent. of these patients gave a history of a loss of 11.9 kg. of body weight in 11.9 months. A comparison of the body weight of these sixty-five patients with the standard weight tables shows that 80.2 per cent. averaged 18.2 per cent. below normal when they first appeared at the hospital. A study of the alteration in body weight following operation in thirty-six patients who had not been treated with compound solution of iodin and therefore were operated on with an elevated metabolism averaging + 39, showed that all except one, in whom the weight was unchanged, lost an average of 5.2 per cent. of their preoperative body weight in an average of eleven days after the operation. The factors responsible for this loss of weight might be several, but it was concluded that the most important was the combination of the inability of the patient to consume normal quantities of food and the elevated metabolism, which may remain high for a period of ten days or longer following thyroidectomy. A second group of twenty-eight patients, who had been treated with compound solution of iodin and in whom the metabolism was reduced to an average of + 21 before the operation, was studied. Of these patients, 18 per cent. had actually gained weight by the tenth postoperative day, and the loss of weight for the entire group averaged only 2 per cent. *This loss is even less than the* average decrease in body weight following operation in a group of twenty-five patients with colloid goiters and nontoxic adenomas.

Glycemia Guide to Treatment in Diabetes Mellitus.—The practicability of routine examination of small, effectively preserved specimens of blood drawn by the patient is discussed by Nadler and Tukey. It is asserted that patients can be taught to collect from their fingers and bring or mail to the laboratory a few drops (about 0.2 c.c.) of blood which is effectively preserved and kept from clotting by a mixture of sodium fluorid and thymol recommended by Sander (5 mg. of sodium fluorid and 1 mg. of thymol are used). Estimations of sugar, accurate for clinical purposes, can be made at a convenient time with the micromodification of the Folin-Wu method described by Randles and Grigg.

Quantitative Determination of Pancreatic Enzymes.—Present clinical methods for the quantitative determination of pancreatic ferments are based on the determination of the amount of enzymatic activity obtained at the end of a fixed interval of time (from one to twenty-four hours). Hollander and Marcus have applied the "time law" of Hedin in a simple manner that can be employed in quantitative tests for these ferments.

Archives of Ophthalmology, New York

104: 531-625 (Nov.) 1925

Vision in Light of Reduced Intensity. C. Edmund and H. U. Möller, Copenhagen.—p. 531.
Treatment of Tabetic Optic Atrophy. E. L. Zimmermann, Baltimore. —p. 545.
Subnormal Accommodation. A. Duane, New York.—p. 566.
Experiences of the Central Area of Descemet's Membrane. D. B Kirby, New York.—p. 588.
Dacryops; Three Cases. O. Landman, Toledo, Ohio.—p. 592.

Boston Medical and Surgical Journal

193: 807-856 (Oct. 29) 1925

*Measurement of Gaseous Metabolism of Humans. F. G. Benedict, Boston.—p. 807.
Teaching in Outpatient Clinics. H. C. Stuart, Boston.—p. 833.
Uterine Rupture at Term After Previous Cesarean Operation. R. J. Hefferman, Boston.—p. 835.

Measurement of Gaseous Metabolism.—A modified form of the Benedict-Collins respiration apparatus with external blower and soda-lime container and with the spirometer not in the direct circulation of air is recommended by Benedict for most exact physiologic experimenting. A small, modified form of the student respiration apparatus, light enough in weight to be carried easily in the hand, has been developed for use chiefly in walking experiments, although control tests have proved that it also measures the metabolism accurately under conditions of rest. An air pump is employed with this apparatus to meter the oxygen absorbed. For experiments involving rather severe work, this apparatus has been placed on a light-weight knapsack and is attached to the back. The air pump in this case is replaced by two basketball bladders filled with oxygen. Another modified form of the student apparatus permits the measurement of the metabolism during continuous, severe stationary work. The long experience of the nutrition laboratory in the use of both closed-circuit apparatus and the development of the Carpenter gas-analysis apparatus has led to the use of an open-circuit arrangement for the ventilation of respiration chambers. A calorimetric chamber with the open-circuit arrangement is at present being employed very successfully for simultaneous measurements of the carbon-dioxid production, the oxygen consumption, the heat production, and the water vaporized. The open-circuit arrangement has the advantage of permitting easy and quick closure of the chamber, with complete disregard of the matter of leaks. All of these modified types of apparatus have been proved to be accurate, in alcohol check tests with a mechanicochemical device.

Colorado Medicine, Denver

22: 364-412 (Nov.) 1925

Historical Sketch of Medical Department of University of Colorado. H. Sewall, Denver.—p. 364.
Relation of Diseases of Skin to Metabolism. H. P. Towle, Boston.—p. 380.
Fractures of Neck of Femur Treated by Whitman Abduction Method. F. Jones, Denver.—p. 389.
Progress in Obstetrics During Last Twenty Years. F. H. Cary, Denver. —p. 401.

Florida Medical Association Journal, Jacksonville

12: 93-122 (Oct.) 1925

Rupture of Liver; Case. G. E. W. Hardy, Jr., Tampa.—p. 94.
Case of Imperforate Hymen Resulting in Retention of Menstrual Fluid and Urine. H. E. Palmer, Tallahassee.—p. 99.
Therapeutic Action of Sun. W. W. and O. B. McKibben, Miami.—p. 101.
Magnesium Sulphate in Eclampsia. A. D. Stollenwerck, Jacksonville. —p. 105.
Observations on Visit to European Medical Centers. E. Jelks, Jacksonville.—p. 106.
Typhoid Fever. S. L. Keffrey, Coconut Grove.—p. 108.

Johns Hopkins Hospital Bulletin, Baltimore

37: 217-284 (Oct.) 1925

*Blood Glucose Curve in Head Injuries. E. C. Davidson and C. I. Allen, Detroit.—p. 217.
*Rôle of Monocyte in Tuberculosis. R. S. Cunningham, F. R. Sabin, S. Sugiyama and J. A. Kindwall, Baltimore.—p. 231.
Viscometric Method for Quantitative Determination of Annylase. W. C. Davison.—p. 281.

Blood Glucose Curve in Head Injuries.—The data presented by Davidson and Allen show clearly that such head injuries as fracture of the skull and concussion of the brain are followed by a profound though temporary derangement of carbohydrate metabolism. While the exact nature of this disturbance has not as yet been definitely ascertained, it seems reasonable to assume that the same mechanism is involved as in the well known sugar-puncture reaction of Claude Bernard. The blood sugar curve following the intravenous injection of 25 gm. of glucose was determined in fifteen normal persons, as well as in twelve cases of concussion of the brain, and in eighteen cases of fracture of the skull. The average fasting blood sugar in concussion of the brain and fractured skull was found to be within normal limits. The average blood sugar at the end of fifteen minutes was much higher in persons with concussion of the brain than in normal persons and the blood glucose curve fell to the fasting level much more slowly. The fifteen minute blood sugar values in patients with fractured skull showed elevations higher even than those seen in concussion, and the fall of the curve to the fasting level was still more delayed. Subsequent observations on both types of head injury during late convalescence revealed curves quite like those obtained in the control cases and gave no support to the opinion of the traumatic origin of diabetes mellitus. The more serious the injury, the more striking was the disturbance in the blood sugar reaction following the administration of glucose. No relationship has been observed between the spinal fluid pressure per se and the blood sugar reaction following the administration of glucose.

Rôle of Monocyte in Tuberculosis.—In these studies on blood Cunningham and his associates are offering as a new concept for an experimental attack on the problem of tuberculosis the theory that the tubercle bacillus attacks one specific type of cell—the monocyte—and that the complete analysis of the effect of tuberculosis on monocytes is a necessary factor for laying a new foundation for progress in the study of this disease. They have found that the effect of tuberculosis on the whole system of the monocytes is a profound one, and consists primarily in a marked overproduction of the diffusely scattered reticular cells which are the parent cells of monocytes. This reticular cell is also the parent form of all of the other white blood cells, so that the effect of the tubercle bacillus on this cell is definitely to force it toward the production of monocytes. The next stage in tuberculosis is the differentiation of vast numbers of monocytes into epithelioid cells; this effect certainly takes place in monocytes which have ingested the bacilli. The bacilli are alive within the cell; and the numbers which can be seen within an individual monocyte point also to the idea that the bacilli multiply within the cell. The authors suggest that the tubercle bacillus lives as a parasite within monocytes. This concept gives a new key for the study of immunity. The effect of the tubercle bacillus on the monocyte is the accentuation of one of its normal structures and the suppression of another. The effect of tuberculosis on the monocyte is so specific that it seems to the authors to contribute additional evidence in favor of the concept that the monocyte is a different strain of cells from the clasmatocyte. The monocyte is originally a cell in which cytoplasmic pattern is an especial characteristic as contrasted with the clasmatocyte, and it is this pattern that is accentuated in the infected monocyte or epithelioid cell. The effects of tuberculosis on the monocytes are so profound as to be seen in the monocytes of the peripheral blood. They become infected. In following the blood of the infected rabbits it was proved that the ratio of monocytes to total lymphocytes is an important law in connection with the disease. The normal ratio of monocytes to lymphocytes is 943:2,805. In animals in which the reaction to the disease was consistently unfavorable to the animal, the ration was 2,129:1,694. The ratio for animals in which the reaction was consistently favorable to the animal was 854:3,047. When these figures are reduced to a ratio with the monocytes shown as one, the normal ration of monocytes to lymphocytes is 1:2.97; the unfavorable ratio of the first group of animals is 1:0.79, while the favorable ratio for the second group is 1:3.56. From these studies it is felt that the immediate steps for progress in the study of tuberculosis involve the attempt to find the substances by which the change of the monocytes into the epithelioid cells is brought about.

Journal of Bone and Joint Surgery, Boston

7: 763-1030 (Oct.) 1925

*Spondylolisthesis. H. Turner and N. Tchirkin, Leningrad, Russia.—p. 763.
*Case of Protracted Disabilities in Region of Shoulder. J. T. Watkins, San Francisco.—p. 787.
*Reformation of Synovial Membrane in Knees of Rabbits After Synovectomy. J. A. Key, St. Louis.—p. 793.
Vertebral Epiphysitis. A Cause of Spinal Deformity. J. Buchnan, Brooklyn.—p. 814.
*Changes in Articular Surfaces in Tuberculous Arthritis. D. B. Phemister, Chicago.—p. 835.
*Acute Suppurative Arthritis in Children. R. I. Harris, Toronto.—p. 849.
*Davis Method for Closed Reduction of Congenital Dislocation of Hip. F. D. Dickson, Kansas City, Mo.—p. 873.
Roentgen-Ray Treatment of Callositas and Verruca Plantaris; Pathogenesis of These Lesions. L. K. McCafferty, New York, and C. L McCarthy, Washington, D. C.—p. 883.
*Activities of Bone Cells. S. M. Cone, Baltimore.—p. 894.
Diagnosis and Prognosis of Bone Sarcoma. A. Kolodny, Iowa City.—p. 911.
*Experimental Study of Transplantation of Nerve Supply of Muscles. J. E. Stewart, St. Louis.—p. 948.
*Case of Infection of Spine. L. Mayer, New York.—p. 957.
*Osteosclerosis with Distribution Suggesting That of Ulnar Nerve. An Unclassified Bone Condition. P. Lewin and S. B. MacLeod, Chicago.—p. 969.
Hereditary Deforming Chondrodysplasia; Three Cases. H. E. Campbell, Cleveland.—p. 982.
*Malformation of Lower Spine Based on a Roentgenographic Study of Children and Adults. A. O'Reilly, St. Louis.—p. 997.

Spondylolisthesis.—Turner and Tchirkin sum up the results of their observations as follows: Spondylolisthesis is a deformity of the lower part of the spine caused by a dislocation of the body of the fifth lumbar vertebra. This slipping is determined by a congenital insufficient ossification of the vertebral arch resulting in its elongation, or more generally in actual nonunion of its "interarticular" portion. This abnormality is one of the various forms of deficient development of the lumbosacral region of the spine. This defect may exist without producing any pathologic signs or symptoms of functional disorder of the spine, owing to the natural accommodating defensive mechanism of the vertebral column. Trauma may reveal an existing defect by the production of deformity, pain, or other clinical symptoms. Injuries occurring in childhood have a more serious effect, and lead to the production of graver deformities than those occurring later in life. Spondylolisthesis, or its precursor, spondylolysis, is a derangement of common occurrence met with in both sexes and perhaps more frequently in males. The clinical picture and roentgenographic appearances of spondylolisthesis are characteristic and permit of exact diagnosis of the condition. Spondylolisthesis must be ranked among the deformities of the spine occurring in everyday practice and meriting the special attention of orthopedic surgeons. Early diagnosis of the condition will serve to prevent progress of the deformity. It is doubtful whether operative measures can aid conservative treatment in alleviating the symptoms and arresting the progress of the ailment.

Protracted Disabilities in Region of Shoulders.—Following an injury or other damage to the shoulder or the knee implying prolonged immobilization, Watkins insists that the limb should be maintained in that position which best conserves function. When the upper extremity is being considered, the logical application of this principle means that the arm must be immobilized as nearly as possible at the side of the head.

Reformation of Synovial Membrane in Knees After Synovectomy.—Key notes that in the rabbit the joint is again approximately normal sixty days after hemisynovectomy. The new synovial membrane is formed in situ by metaplasia of underlying connective tissue cells, and there is little or no tendency for surface growth from the edges to cover the denuded areas, as occurs in the repair of a defect in an epithelial surface. The synovial cells are connective tissue cells slightly specialized by their location on a free connective tissue surface.

Changes in Articular Surfaces in Tuberculous Arthritis.—In the earlier stages of tuberculous arthritis, in joints with both free and contacted articular surfaces, Phemister says, the articular cartilage is usually destroyed most extensively along its free articular surfaces by granulations which overgrow it from the surrounding synovial membrane. In the regions of contact and pressure of articular surfaces, surface destruction by granulations does not take place, and the cartilage is preserved longest. As the disease progresses, subchondral granulations develop which absorb the articular cortex and attack the cartilage from beneath. In severe tuberculous arthritis there may be early necrosis and caseation of the overgrowing synovial granulations, so that there is little or no destruction of articular cartilage along its free surfaces. In this event the destruction of articular cartilage is brought about mainly by the subchondral granulations, which do not undergo early necrosis and caseation and do not present the usual histologic picture of tuberculous tissue. The bony involvement along the articular surface may be either primary or secondary. When primary, the dead bone may break down, leaving a cavity, or may persist and form a sequestrum which has articular cortex and, in some instances, cartilage preserved on it and is denser than the surrounding living bone which subsequently atrophies. Secondary involvement of bone along the articular surfaces may lead either to destruction of the entire articular cortex by superficial caries or to more or less extensive and deep areas of necrosis at the points of greatest pressure in the joint. This deep invasion is often bilateral and is followed by the formation of "kissing sequestrums," which may be mistaken for primary foci of osseous infection.

Acute Suppurative Arthritis in Children.—An analysis is presented by Harris of the etiology, treatment and end-results of fifty-one cases of suppurative arthritis. The best treatment is simple arthrotomy for drainage, instituted at the earliest possible moment and supplemented with fixation and extension. Such treatment results in recovery with normal movement in more than half the cases.

Reduction of Congenital Dislocation of Hip.—As a result of his experience with the Davis method of closed reduction of congenital dislocation of the hip, Dickson is convinced that this method is as effective in its results as any of the accepted methods. As the force is applied to the head of the bone, no leverage action being used, there is less danger of producing a fracture of the femur than in most of the circumduction methods. There is a minimum amount of trauma to the soft parts by this method, which is a very desirable factor, little or no reaction following. The sooner after the age of 2 years the hip or hips are reduced, the better the results. The closed reduction after the age of 7 years is difficult and the outcome, as a rule, far from satisfactory.

Activities of Bone Cells.—The conditions described by Cone indicate that bone under pathologic conditions may act like any other tissue. There is a revision of its various constituents to an embryonal condition and a remodeling of the bone in ways suitable to the change in its circulation and chemistry. There is a coincident reversion of bone cell and marrow cell to the embryonal state. New bone and new connective tissue result therefrom. The most important factor in bone cell renewed activity is passive hyperemia and edema. Edema dissolves the salts, softens the bone matrix, and is instrumental in the enlargement and confluence of lacunae. The bone cell is released before it again becomes active. The bone cells, notably those at the margins of the cancelli, enlarge, divide, and are now free in the marrow. They form a part of the marrow as possible bone formers. They are seen as a syncytium or as cell masses resembling callus, and grade off into new bone.

Experimental Transplantation of Muscle Nerve Supply.—Stewart presents the results of a series of experiments in nerve transplantation on animals, by a method which seemed to offer a more direct contact between active and degenerated nerve fibers in muscles than the implantation of the nerve trunk directly into muscle, and one which presented fewer technical difficulties than the end-to-end suture of small nerve trunks. A nerve-muscle transplant was made. The conclusion is drawn from summing up the entire series of experiments that it is possible to reneurotize a paralyzed muscle by transplanting a block of active muscle containing its nerve supply into the paralyzed muscle, but the technical difficulties are so great that considerable doubt is thrown on its practical application. Several points were brought out in the work that are considered of value, both in future investigative work and in practical surgery. It was noticed that dogs in which sartorius muscle had been resected and the rectus femoris paralyzed, got about perfectly normally after a few weeks, showing no limp whatever in walking. Experiments, the results of which were determined by the ability of the animal to use the extremity, would therefore seem unreliable.

Infection of Spine.—The clinical study of his case forces Mayer to the conclusion that a kyphos is not necessarily produced by a change in the shape of the vertebral bodies. It may also be caused by an inflammatory lesion of the bone, which, without resulting in actual bone destruction, seems to favor a softening of the intervertebral disks and a consequent deviation of the spinal bodies from the normal alinement. In the lumbar region the kyphosis could be produced by a spasm of the psoas muscle, which, taking its origin from the lateral process, would cause a buckling of the spine demonstrable in the roentgenogram by a narrowing of the anterior portion of the intervertebral spaces. In the case studies, the inflammatory lesion was due to *Streptococcus viridans*, which in this, as well as in other reported cases, causes bone inflammation without pus formation.

Osteosclerosis with Peculiar Distribution.—Lewin and MacLeod present a brief history, physical examination and roentgenograms of a condition of unusual bone pathology characterized by a peculiar distribution confined to the bony structures of the lower forearm, wrist, hand and fingers, corresponding with the superficial ulnar nerve distribution plus the entire ulna. The changes in the bones are characterized by increased production of bone, sclerosis, eburnation, almost complete disappearance of medulla, with obliteration of cortical outlines, slight periosteal thickening, lack of atrophy, or canalization, and no invasion of the soft tissues. The ulna is outwardly curved, and there is decreased deep sensibility to tuning-fork tests applied to the bones involved. The etiology may lie in a congenital anomaly or a neurologic or vascular disturbance.

Malformation of Lower Spine.—It would seem from O'Reilly's study that variations in the lumbosacral region occur frequently in persons who have never had any symptoms of backache and that some of these variations are very marked and severe. They also occur in persons who lead an active life and who work hard. It is probable that these variations predispose to backache, but that posture, muscle relaxation, and ligamentous strain are the actual causes.

Journal of Comparative Neurology, Philadelphia

39: 173-324 (Oct.) 1925

Optic Tracts and Centers of Opossum, Didelphis Virginiana. C. Tsai, Chicago.—p. 173.
Descending Tracts of Thalamus and Midbraid of Opossum, Didelphis Virginia. C. Tsai, Chicago.—p. 217.
Development of Cerebellum in Frog (Hyla Regilla) in Relation to Vestibular and Lateral Line Systems. O. Larsell, Portland, Ore.—p. 249.
Size Changes in Primary Brachial Motor Neurones Following Limb Excision in Amblystoma Embryos. S. R. Detwiler and R. W. Lewis.—p. 291.
Postnatal Changes in Vascularity in Cerebral Cortex of Male Albino Rat. E. H. Craigie, Toronto.—p. 301.

Journal of Immunology, Baltimore

10: 741-844 (Sept.) 1925

Physicochemical Aspects of Hemolysis. R. Rockwood, Rochester, Minn.—p. 741.
Antigenic Character of Heated Protein. J. Furth, Philadelphia.—p. 777.
*Agglutination Reactions of Diphtheria Group of Organisms. G. H. Bailey, Boston.—p. 791.
*Precipitin Test in Identification of Yeasts. A. K. Balls, Philadelphia.—p. 797.
Natural Auto and Homoio Spermotoxins in Guinea-Pig Serum. L. S. N. Walsh, St. Louis.—p. 803.
Serologic Studies on Bovine Infectious Abortion. J. G. McAlpine and L. F. Rettger, New Haven, Conn.—p. 811.
*Complexity of Scarlet Fever Toxin and Antitoxin. W. H. Park and R. G. Spiegel, New York.—p. 829.
*Specific Hypersensitiveness. XVIII. Indirect Method of Testing for Conditions of Atopic Hypersensitiveness. M. Walzer and S. D. Kramer, Brooklyn.—p. 835.

Agglutination Reactions of Diphtheria Group.—No relationship was found by Bailey between a considerable number of strains of avirulent diphtheria bacilli and a limited number of strains of virulent diphtheria bacilli, *B. hofmanni* or *B. xerosis*.

Precipitin Test in Identification of Yeasts.—Balls shows that serum reaction may offer considerable aid in the differentiation of various species and subspecies of yeasts. The precipitin method, however, is evidently quite well adapted for use in differentiating between closely related subspecies of yeasts and in showing relationships, presumably in their protein structures which are not brought out in the ordinary botanical classification.

Complexity of Scarlet Fever Toxin.—In testing for the potency of scarlet fever antitoxin, Park and Spiegel noticed that an amount of horse antitoxic serum which would neutralize the toxin in a majority of children would totally fail in others. It was also noted that the antitoxic serum of different horses would occasionally vary in the ability to neutralize a toxin in the same child and finally that in some individuals in whom the ordinary amount of antitoxin was not effective there was an increased amount of antitoxin. These observations seem to prove that the scarlet fever toxic filtrate produced by a single strain was not a single toxin but a group of toxins, and that a person might be immune to one or more of the component toxins of a toxic broth and yet susceptible to others. They also prove that certain horses react in producing antitoxin more to one of the components and certain horses to another in much the same way as Park has shown—that of two horses receiving simultaneously the same quantity of tetanus and diphtheria toxins one may develop a potent diphtheria antitoxin and a weak tetanus antitoxin while the other will do the opposite. The same difference is noted in different animals receiving the same dose of bacterial antigen.

Indirect Method of Testing for Hypersensitiveness.—Walzer and Kramer employed the principle of transferred local specific hypersensitiveness as the basis for an indirect method of testing for hypersensitiveness in those cases in which direct testing of the patient is inadvisable or impossible. This method is most applicable to infants and children.

Journal of Infectious Diseases, Chicago

37: 285-384 (Oct.) 1925

Antigenic Properties of Certain Glucoproteins. K. Goodner, Lawrence, Kan.—p. 285.
*Toxic Products of Bacterium Enteritidis of Related Micro-Organisms. S. E. Branham, Chicago.—p. 291.
Protective Substance in Antipneumococcic Serum. II. L. D. Felton, Boston.—p. 309.
Quantitative Relations Between Antigen and Antibody in the Precipitin Reaction. H. W. Cromwell, Madison, Wis.—p. 321.
*Nonglucose Fermenting Bacteria and Insulin. LXXIII. A. I. Kendall, St. Louis.—p. 329.

Effect of Insulin on Cultures of B. Bulgaricus and B. Acidophilus. LXXIV. A. I. Kendall and M. Ishikawa, St. Louis.—p. 333.
*Effect of Insulin on Bacterial Metabolism. LXXV. A. I. Kendall and M. Ishikawa, St. Louis.—p. 337.
*Pathogenic Subtilis Bacillus from Patient with Chronic Tuberculosis. H. C. Sweany and M. Pinner, Chicago.—p. 340.
*Toxin Production by Clostridium Botulinum in Canned Foods. L. Thompson and F. W. Tanner, Urbana.—p. 344.
*Actual Temperatures Attained by Mediums in Autoclave Sterilization. A. Benton and A. Leighton, Washington, D. C.—p. 353.
*Germicidal Efficiency of Coconut Oil and Linseed Oil Soaps: Their Mixtures with Cresol. F. W. Tilley and J. M. Schaffer, Washington, D. C.—p. 359.
*Standardization of Tuberculin. E. R. Long, Chicago.—p. 368.

Toxin of Bacterium Enteritidis.—Branham's results appear to indicate that the poison demonstrated by his experiments is within the bacterial cells, is set free on cell disintegration, and probably is not a true soluble toxin.

Effect of Insulin on Nonglucose Fermenting Bacteria.—Kendall's results were wholly negative. There is no suggestion in them that insulin, under the conditions imposed by the method employed, stimulated the several nonglucose fermenting bacteria to utilize this sugar with the production of acid.

Effect of Insulin on Bacterial Metabolism.—It would appear that insulin, under the conditions imposed by the experiment done by Kendall and Ishikawa, had no appreciable effect on the utilization of glucose for energy by a considerable number of bacterial types.

Pathogenic Subtilis Bacillus in Case of Tuberculosis.—In the case of a patient with acute and chronic tuberculous lesions in the lungs and other organs and with widely scattered hemorrhages and larger and smaller abscesses, as well as acute inflammatory processes in the endocardium, pericardium, leptomeninges, etc., bacteriologic examination gave the following results: from the heart blood, *Streptococcus nonhemolyticus* and *Bacillus subtilis;* from the pericardial fluid, *S. nonhemolyticus* and *B. subtilis;* from the pericardial fluid, pneumococcus, *Staphylococcus aureus* and *B. subtilis;* from the peritoneal fluid, *S. aureus* and *B. subtilis;* from the brain abscess, *B. coli.* According to Sweany and Pinner, this appears to be the second time that a subtilis bacillus, pathogenic for animals, has been isolated from human sources other than the eye. This bacillus was isolated from most of the lesions and the principal body fluids; it grew at first only on medium containing blood, in which it produced a large hemolytic zone, and it killed white rats. These results suggest that subtilis bacilli in cultures from human sources perhaps should not be discarded offhand as always being due to mere contamination.

Toxin Production by C. Botulinum in Canned Foods.—Twenty-three kinds of food were inoculated by Thompson and Tanner with detoxified spores of four strains of *Clostridium botulinum.* Those found to be regularly toxic with all strains are: red kidney beans, lima beans, hominy, peas, sweet potato, salmon and shrimp. Those irregularly toxic are: asparagus, beets, pumpkin and spinach. The acid fruits and the very acid vegetable products, such as sauerkraut and dill pickles, did not become toxic. Certain extracts and liquors from canned vegetables were used as a medium in comparison with brain broth and hormone broth. The extract from white potato was found equal to the best medium for promoting growth. The liquor from cans of peas, corn and salmon gave lesser growth, while that from spinach gave growth only after being neutralized. The reaction in cans of asparagus, string beans, beets, pumpkin and spinach probably explains the irregularity of toxic production so frequently noted in these foods. The reaction in certain canned vegetables is greatly affected by the quality of the material put in the cans. Experiments with spinach show that a small amount of rotted material will reduce the acidity to a point where *C. botulinum* can grow and develop a toxin.

Sterilization Controlled by Temperature Not Pressure.—Benton and Leighton emphasize the point that sterilization should be controlled according to temperature, not pressure. Autoclaves should be equipped with reliable thermometers and should have the air outlet at the bottom.

Germicidal Efficiency of Coconut and Linseed Oil Soaps.—Tilley and Schaffer found that coconut oil soap has a greater bactericidal efficiency than linseed oil soap against *B. typhosus, B. pyocyaneus* and *Staphylococcus aureus,* both in the absence of added organic matter and in the presence of 25 per cent. of the horse blood serum. The bactericidal efficiency of coconut oil soap is increased by the addition of a slight excess of alkali and by the addition of sodium chlorid. The practical value of the action of sodium chlorid is, however, greatly diminished by the undesirable physical changes produced and by failure to maintain the increased efficiency in the presence of blood serum. Although its low efficiency against *Staphylococcus aureus* and *B. tuberculosis* limits the value of coconut oil soap as a disinfectant, it seems likely that it can be used to advantage against other organisms. It is suggested that if a nonpoisonous antiseptic in the form of soap is desired, this need may be very well met by the use of pure coconut oil soap, which combines some germicidal activity with the detergent properties of soap. The bactericidal efficiency of cresol soap mixtures is greatly affected by the proportions of soap and cresol used. Mixtures containing approximately half as much soap as cresol showed maximum efficiency. An increase in the proportion of soap causes a reduction in efficiency. Saponified cresol solutions containing coconut oil soap have a greater germicidal efficiency than those containing linseed oil soap, both in the absence of added organic matter and in the presence of 25 per cent. blood serum. The difference in efficiency is most marked when the cresylic acid used contains a large proportion of high boiling phenols. The addition of sodium hydroxid in fairly large excess over that needed to saponify the oil does not diminish the bactericidal efficiency of saponified cresol solutions. The addition of sodium chlorid to diluted saponified cresol solutions containing coconut oil soaps increases bactericidal efficiency without causing such undesirable physical changes as occur with the soaps alone. The increased efficiency is fairly well maintained in the presence of 25 per cent. blood serum. It was found that 21 per cent. coconut oil (or the chemically equivalent amount of its fatty acids) as soap can satisfactorily take the place of 28 per cent. linseed oil as soap for holding in solution the 50 per cent. cresylic acid contained in saponified cresol solutions.

Standardization of Tuberculin.—Long proposes standardizing tuberculin on the basis of the hypersensitiveness of the spermatocytes of the tuberculous guinea-pig to the action of tuberculin. The spermatocyte reaction (previously reported as the testicle reaction) is delicate, and when carried out in the manner described, is said to be of greater constancy and reliability than the other methods based on hypersensitiveness of the tuberculous guinea-pig; namely, the minimum lethal dose and the cutaneous test methods. Necrosis and subsequent absorption of the spermatocytes is used as the basis for recognizing a positive reaction, and the limiting dilution at which this is observed under the conditions outlined above is considered to represent one unit of tuberculin.

Laryngoscope, St. Louis

35: 735-812 (Oct.) 1925

Teaching of Undergraduate Laryngology. L. W. Dean, Iowa City.—p. 735.
Problem of Focal Infections in Nasal Sinuses. E. R. Faulkner, New York.—p. 742.
Osteoma of Frontal Sinus Extending into Orbit and Anterior Cerebral Fossa. H. M. Goodyear, Cincinnati.—p. 751.
Sublingual Tonsillar Abscess. Lingual Quinsy. M. F. Butler, Philadelphia.—p. 754.
Pemphigus as Beginning Tonsillar Manifestation. H. Dintenfass and S. S. Greenbaum, Philadelphia.—p. 758.
Head Injury from Air Rifle; Operation; Recovery. J. A. Morgan, Honolulu.—p. 763.
Maxillary Sinusitis of Oral Origin. H. S. Dunning, New York.—p. 766.
Intermittent Protrusion of Right Eye. S. J. Selkin, New York.—p. 772.
Three Cases of Primary Acute Mastoiditis. S. J. Kopetzky, R. Almour, New York.—p. 775.
Clinical Significance and Diagnostic Value of Tuning Fork Tests for Hearing. A. B. Duel, New York.—p. 778.
Brain Abscess, Sinus Thrombosis and Meningitis Complicating Acute Mastoiditis; Two Cases. J. M. Polsiar, Brooklyn.—p. 782.
Temporosphenoidal Abscess and Mastoiditis of Doubtful Origin. W. Siegmeister, Brooklyn.—p. 787.

Modified Radical Mastoidectomy for Chronic Purulent Otitis Media. H. B. Blackwell, New York.—p. 791.
Two Cases of Primary Jugular Bulb Thrombosis, Not in Infants. W. Ginsberg, New York.—p. 800.
Sinuscope. M. Maltz, New York.—p. 805.

New York State Journal of Medicine, New York

25: 983-1018 (Nov. 1) 1925

Problem of Chronic Cardiac Cripple. J. B. Herrick, Chicago.—p. 983.
*Statistical Aspects of Problem of Organic Heart Disease. L. I. Dublin, New York.—p. 986.
*Program of Procedure in Problem of Cardiac Cripple. H. F. Swift, New York.—p. 991.
*Organization of Cardiac Clinic. J. Wyckoff, New York.—p. 995.

Organic Heart Disease.—Among 1,000 cases of organic heart disease referred to by Dublin, 88 per cent. of the patients showed enlargements of the heart, among whom one in five had enlargement of the heart only. Hypertrophy was the commonest impairment. Mitral insufficiency was diagnosed in approximately half of all the cases. Mitral stenosis was present in 44 per cent.; but, in nearly all of these cases, mitral regurgitation was also present. Aortic insufficiency was present in about 15 per cent.; aortic stenosis, in about 3 per cent.; aortitis, in 17 per cent., and aneurysm in a little over 1 per cent.

Special Cardiac Clinic and Periodic Examinations.—Swift points out that the formation of special cardiac clinics and periodic examination of apparently well persons will afford many opportunities for detecting various types of heart disease much earlier than has been possible in the past. These opportunities also carry with them the obligation of giving proper advice concerning specific as well as general prophylactic and curative measures. In diseases of the circulatory system, entirely new problems will be presented to the physicians, for in the past most of the patients have not applied for medical assistance until their cardiac capacity was diminished enough to prevent them from carrying on their daily tasks.

Organization of Cardiac Clinic.—Wyckoff details not only the plan of organization for a heart clinic in general, but also that of the Bellevue Hospital Social Service Cardiac Clinic for Working Adults in particular in all its details.

Ohio State Medical Journal, Columbus

21: 801-872 (Nov. 1) 1925

The Doctor—Protection or Rescue. G. E. Vincent, New York.—p. 805.
Causes of Failure in Corrective Rhinoplasty. J. Maliniak, New York.—p. 807.
Complicating Factor Duodenal Stasis in Diagnosis of Chronic Upper Abdominal Disease. J. T. Murphy, Toledo.—p. 815.
*Beef Bone Splints. I. B. Harris, Columbus.—p. 818.
*Placenta Praevia and Ablatio Placentae. W. R. Barney, Cleveland.—p. 821.
Relation of Anxiety States to Thyroid Gland. C. E. Kiely, Cincinnati.—p. 824.
*Early Pregnancy Following Delivery; Case. W. Brehm, Columbus.—p. 826.

Beef Bone Splints.—Twenty-one cases of fracture treated by the use of beef bone as an intramedullary splint are reported by Harris. Favorable results were obtained in every case. In only two cases of fracture of the femur was union delayed for a few weeks longer than usual.

Placenta Praevia and Ablatio Placentae.—Barney reports forty-eight cases of placenta praevia, an incidence of 1:170. Of this series thirteen were marginal, twenty-three were lateral, and twelve were central. The maternal mortality was 2 per cent plus, only one woman dying on the nineteenth day post partum. Necropsy showed a pyelonephrosis and an abscess in the uterine incision which was probably the original focus of infection. Twelve fetal deaths were noted, making a fetal mortality of 25 per cent. Of these, seven were in the nonviable age and one was a macerated fetus. Of forty-six cases of ablatio placentae, six were of the complete variety, making a case incidence of 1:130. The maternal mortality among these cases was 16 per cent; the fetal mortality, 40 per cent.

Early Pregnancy Following Delivery.—July 7, 1924, Brehm delivered his patient, aged 21, of a normal full-term child. April 21, 1925, he delivered her of twin girls. Except for the size they appeared normal.

South Carolina Medical Association Journal, Greenville

21: 231-258 (Oct.) 1925

Brief Consideration of Pelvic Inflammatory Disease. W. B. Sparkman, Greenville.—p. 233.
History of Uncinariasis. H. Smith, Greenville.—p. 236.
Drinking Water with Meals. Potential Aid to Digestion. G. M. Niles, Atlanta, Ga.—p. 237.
Medical and Surgical Potpourri from Some Clinics of Europe. J. R. Young and C. S. Breedin, Anderson.—p. 239.

Texas State Journal of Medicine, Fort Worth

21: 335-396 (Oct.) 1925

*Human Amebiasis. C. A. Kofoid, Berkeley, Calif.—p. 347.
*Asthma and Sinus Disease in Children. J. L. Jenkins, Dallas.—p. 350.
*Acute Hemorrhagic Cortical Encephalitis. L. O. Wilkerson, Bryan.—p. 354.
*Periarterial Sympathectomy. C. S. Venable, San Antonio.—p. 356.
Multiple Myeloma Syndrome in a Child. M. E. Gilmore, Fort Worth.—p. 358.
Idiopathic Atony of Bladder. R. S. Mallard, Fort Worth.—p. 362.
Factors Essential to Good End-Results in a Gastric Surgery. C. V. Brindley, Temple.—p. 364.
Perforating Duodenal Ulcer. J. W. Burns, Cuero.—p. 367.
Nondiabetic Acidosis. R. Moore, Dallas.—p. 369.
Treatment of Toxemias of Pregnancy. W. R. Cooke, Galveston.—p. 372.
*Pollen Hay-Fever and Asthma. I. S. Kahn, San Antonio.—p. 375.
Roentgen-Ray Diagnosis of Pulmonary Tuberculosis. J. W. Cathcart, El Paso.—p. 379.
Asthenopia. N. H. Bowman, Waco.—p. 382.

Human Amebiasis.—The relationship of amebic infection, not only to dysentery, but also to chronic intestinal trouble, to local abscesses and to certain arthritic conditions, Kofoid points out, makes this infection an important one in medical practice. This infection also constitutes a complicating factor which should be borne in mind in all cases in which diagnosis is obscure. A thorough going, accurate stool examination by a competent examiner trained in protozoology is highly desirable in any complete physical examination.

Sinus Disease and Asthma.—In all cases of asthma, Jenkins would consider the sinuses a causative factor until proved otherwise. Negative proof should be arrived at only after repeated examinations by a rhinologist.

Mercurochrome in Acute Encephalitis.—Wilkerson reports two cases of acute hemorrhagic encephalitis of the cortex, in one of which recovery followed treatment with mercurochrome-220 soluble.

Periarterial Sympathectomy.—Venable has performed periarterial sympathectomy in two cases of Raynaud's disease, in one case of early diabetic endarteritis and in one case of old trophic ulcer, the result of sciatic injury. In one case of Raynaud's disease, imminent amputation was postponed for eight months, and then amputation just above the ankle resulted in prompt healing of the stump, which was very interesting because of a series of previous amputations of the other leg, due to the same cause. In the other case of Raynaud's disease, there was complete obliteration of the femoral artery from the middle of Scarpa's triangle to the ulcerative stump site just below the knee. But even at this the circulation was improved for several days, the pain relieved, and the edema and gangrenous line of demarcation lessened, followed by prompt stump healing after subsequent amputation. The patient with early diabetic endarteritis has now remained well for nearly five months. The case of trophic ulcer of the heel as a result of severance of the sciatic nerve, two and one-half years before, was of two years' duration. Following a sympathectomy, this ulcer healed in about five weeks, with no further treatment than being kept clean with mercurochrome solutions.

Treatment of Pollen Hay-Fever and Asthma.—Kahn emphasizes the fact that the successful handling of hay-fever and asthma consists of a great deal more than the application of a few routine commercial skin tests, followed by the mechanical administration of from sixteen to twenty previously determined advertised dosages, none of which may be applicable to the individual case at hand. Such routine may help about 40 per cent of the cases, but will benefit fewer than that in Texas. Kahn details his method of treatment with pollens, which has yielded more than 80 per cent. of success.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anesthesia, Manchester

3: 49-108 (Oct.) 1925

Postanesthetic Toxemias. S. R. Wilson.—p. 49.
Advent of Great Discovery: Anesthesia, October, 1846. D. W. Buxton.—p. 56.
Eye Troubles and Anesthesia. J. Blomfield.—p. 66.
Present Status of Local Anesthesia. R. E. Farr.—p. 68.
Lawson Tait; Pioneer in Certain Methods of Anesthesia. W. J. McCardie.—p. 76.
Nitrous Oxid-Acetylene-Oxygen Anesthesia for Tooth Extraction and Oral Surgery. A. Goldman and J. D. Goldman, New York.—p. 80.

British Journal of Experimental Pathology, London

6: 203-268 (Oct.) 1925

*New Method for Concentration of Bacilli in Tuberculous Milk. S. R. Douglas and L. J. Meanwell.—p. 203.
*Plague Immunization in Guinea-Pigs and Rats. H. Schütze.—p. 207.
*Rabbits and Experimental Measles. W. J. Purdy.—p. 210.
*Virulence of Corynebacterium Diphtheriae, Especially of Atoxic "Subspecies." S. F. Dudley.—p. 225.
*Significance of Serologic Types of Gonococcus. E. E. Atkin.—p. 235.
*Obstruction of Renal Tubules During Excretion of Hemoglobin. S. L. Baker and E. C. Dodds.—p. 247.
*Etiology of Dental Caries. IV. J. McIntosh, W. W. James and P. Lazarus-Barlow.—p. 260.
*Etiology of Dental Caries. V. E. C. Dodds.—p. 266.

Concentrating Bacilli in Tuberculous Milk.—A method of concentration is described by Douglas and Meanwell by means of which the microscopic examination of milk for the presence of tubercle bacilli is made more reliable. Briefly, the method consists in shaking the milk with oil before the addition of the fat solvent (ether). Practically all the bacilli suspended in the fluid are finally collected in the zone lying between the oily and watery layers. Out of thirty samples of tuberculous milk, twenty-six were positive microscopically by the use of this method, while by the routine method tubercle bacilli were demonstrated only ten times.

Plague Immunization in Guinea-Pigs.—Three well known types of plague vaccine—Haffkine's broth, heat killed agar-grown and phenol killed agar-serum vaccine—have been compared by Schütze, and in the experiments with guinea-pigs a difference in immunizing power was disclosed. The last was the most efficacious—a vaccine prepared according to the modified method of Rowland. In the experiments with rats all three vaccines immunized equally well. Whether this is due to the infecting doses having been too weak for severe and differentiating tests, or because rats respond to plague vaccines in a different manner from guinea-pigs, and if so, to which of those animals man in this respect more nearly corresponds, has not been decided.

Experimental Measles in Rabbits Not Possible.—Purdy has uniformly failed to produce experimental measles in rabbits but of the only two monkeys used, both gave an apparently satisfactory positive reaction.

Virulence of Corynebacterium Diphtheriae.—All of thirty-four strains of toxic diphtheria bacilli used by Dudley killed guinea-pigs with small doses. No strains were found with a virulence intermediate between that of the toxic strains and the nontoxic. The lethal action of the large doses was neutralized to a great extent by antitoxin. The nature of the toxic action is discussed. It is thought to be due more probably to an endotoxin than to exotoxin and the protective action of antitoxic serum to the presence in the serum of antibodies other than antitoxins.

Serologic Types of Gonococcus.—Atkin's observations lend no support to the view that gonococcal strains can be divided up into an arbitrary number of fixed serologic groups.

Renal Obstruction Following Blood Transfusion.—Two cases of intrarenal obstruction caused through blood transfusion are described by Baker and Dodds and compared with the intrarenal obstruction of blackwater fever. A series of in vitro experiments proves that hemoglobin is thrown out of solution when (*a*) the reaction of the medium is not more than about p_H 6, and (*b*) the sodium chlorid content is about 1 per cent. or over. From these experiments it would appear that hemoglobin is excreted in solution in the glomerular transudate. After concentration in the tubules the acidity and the salt concentration increase, with the result that the pigment is precipitated, probably in the form of hematin. This theory would explain the production of intrarenal obstruction in cases of the type described and in blackwater fever. A suggestion for the treatment of these conditions, based on the above conclusions, is offered; namely, the production of alkaline diuresis.

Etiology of Dental Caries.—A summary of results to date obtained by McIntosh et al. in this study shows that saliva appears to be intimately connected with the occurrence or nonoccurrence of dental caries, being more acid in those subject to the condition than in those who are immune. Experiments devised to show that teeth vary in their powers of resisting acid were inconclusive. The saliva may contain agglutinins against *B. acidophilus-odontolyticus*, but only in small quantities. Saliva has no appreciable bactericidal action against *B. acidophilus-odontolyticus*.

Etiology of Dental Caries.—An inquiry into the relations between the concentration of certain nitrogenous bodies and chlorids of blood and saliva is described by Dodds. Attention is called to the high ammonia content of saliva, together with a method for its estimation apart from urea. There is no constant relationship between the constituents of blood and saliva examined, except that the former are much the lower. The variations and the composition of saliva are so great that no clinical significance can be placed on the figures—at least for normal individuals.

British Journal of Tuberculosis, London

9: 163-218 (Oct.) 1925

Montana as Swiss Health Station for English Tuberculous Patients. T. N. Kelynack and A. Morland.—p. 163.
Hypocrinism in the Tuberculous. H. R. Harrower.—p. 181.
*Late Results of Renal Tuberculosis. J. S. Joly.—p. 188.
*Danger of Tuberculous Infection from Migratory Consumptives. W. B. Tomson.—p. 196.
Morland Clinics at Alton. H. Gauvain.—p. 200.

Late Results of Renal Tuberculosis.—Joly asserts that renal tuberculosis treated by nonoperative methods, such as tuberculin, is generally fatal. About 90 per cent. of the patients die from the direct effects of their infection. The majority of the so-called cures are really cases in which the kidney becomes occluded, and the tuberculous process is not arrested but is merely shut off from the rest of the urinary tract. There are a few instances in which a portion of the kidney has become occluded while the remainder of the organ continues to function, but they are so rare that they are pathologic curiosities. Further, these patients are not cured, as they still suffer from a closed tuberculous focus. As for surgical treatment, the total mortality is about 20 per cent., the cures amount almost to 60 per cent., while the remaining patients still suffer from tuberculosis. Joly is certain that if patients were given a thorough physical examination as soon as the tubercle bacilli were found in the urine, better results would accrue from efforts at treatment. The operative mortality would be negligible; the late mortality would not be more than 10 per cent., and the ultimate cures would be at least 75 per cent.

Danger of Tuberculous Infection from Migratory Consumptives.—To prevent tuberculous infection by migratory consumptives, Tomson suggests the enforcement of measures for the control and disinfection of tuberculous sputum: the tuberculous patient must be under supervision as long as he is at large; it is advisable to perfect the system of notification. Health authorities should notify one another whenever possible regarding the movements of tuberculous patients, so that a medical officer of health may know the address of every consumptive arriving in his locality. The onus of notification should rest on the patient, so that when a tuberculous patient goes to live in a different locality, it should be his legal duty to notify the right authority. This is Tomson's main contention. A still further advance suggested is to develop the principle of segregation. It would be enormously to the advantage of the patient as well as to the public if consumptives could live in houses or hostels especially adapted to their needs. These patients should be able to obtain apartments suitably furnished, easily cleansed, and dust free. Attention should be directed to sunlight. The proposed establishment should be under the management of a woman who possessed a knowledge of housekeeping and who had undergone a special training for the work and who understood the habits of the poor.

Glasgow Medical Journal

22: 185-240 (Oct.) 1925

*Ringbodies in Anemia. T. K. Monro and J. A. W. McCluskie.—p. 185.
Epidemic Diseases of Central Nervous System. A. K. Chalmers.—p. 190.

Ring Bodies in Anemia.—In every one of eight cases of pernicious anemia Monro and McCluskie found ring bodies. In one case reported in detail the cells affected were chiefly those showing some abnormality of color, a few showing punctate basophilia. In some cells there was only a bright acidophil granule; in others, a stout ring usually of reddish violet color, with a small chromatin dot somewhere in its circumference. The predominant type was a bright red oval ring, usually with one or two transverse striations, and a particle which took on the chromatin stain at one pole. Occasional figures-of-eight and forms resembling a coiled spring were seen, all of which took a characteristic red color with Leishman's stain. In several of the affected cells brick-red granules were seen, closely resembling Schuffner's dots as observed in benign tertian malaria. Giemsa's stain was used.

Journal of Neurology and Psychopathology, London

6: 91-180 (Aug.) 1925

Epilepsy as Symptom of Disseminated Sclerosis. S. A. K. Wilson and H. J. MacBride.—p. 91.
Case of Multiple Neurofibromata Associated with True Angioneurofibroma of Acoustic Nerve, Jacksonian Epilepsy and Osteoporosis. G. W. T. H. Fleming and H. A. Cookson.—p. 104.
Syringomyelia in Association with Aromegaly. H. J. MacBride.—p. 114.
*Psycho-Analytical Method of Getting to Sleep. E. P. Farrow.—p. 123.
Significance of Vegetative Nervous System in Tabes Dorsalis. M. R. Barkas.—p. 126.

How to Go to Sleep.—The most successful method of securing sleep in Farrow's experience proved to be the process of painting large imaginery figure threes extremely slowly on a large imagined black wall with an imaginery brush and can of white paint. The author of this method had said that after one had painted three of these threes in this very slow manner, he would find it quite impossible to remain awake. This process usually worked very well in the author's case. He usually went off to sleep after he had finished painting only one or two of the threes; but if not, almost invariably after he had finished the three of them.

Journal of Oriental Medicine, Dairen, Manchuria

3: 127-194 (Sept.) 1925

Secretion of Gastric Juice When Given Rice Gruel as Test Breakfast. Y. Nakao.—p. 127.
Effects of Water on Gastric Secretion: Its Application for Examination of Gastric Functions. Y. Nakao.—p. 150.
Significance of Glycosuria Resulting from Ligation of Common Iliac Artery. M. Arai.—p. 186.
Typhus and Paratyphus Abdominalis in Manchurian Children. S. Kawashima.—p. 189.
Agglutination Power of Tuberculous Serum. T. Yamaguchi.—p. 190.
Pelvic Veins of Japanese Women. M. Saito.—p. 191.
Recurrences in Course of Scarlet Fever. T. Satake.—p. 193.

Journal of State Medicine, London

33: 451-500 (Oct.) 1925

Sterilization of Water by Chlorin and Some of Its Compounds. C. H. H. Harold.—p. 451.
Criteria Necessary for Identification of Microbe as Pathogenic. W. M. Crofton.—p. 478.
*Preventive Properties of Urethane Derivative of Oxyaminophenylarsinic Acid in Experimental Syphilis. C. Levaditi and S. Nicolau.—p. 481.
*West Country Method of Rendering Milk Safe from Tubercle. H. Scurfield.—p. 487.

Preventive Properties of Urethane Derivative.—The urethane derivative of oxyaminophenylarsinic acid is an arsenical compound, which, according to Levaditi and Nicolau, when given by mouth brings about a rapid healing of the syphilitic lesions of the rabbit. Moreover, this compound exhibits prophylactic properties.

Rendering Milk Safe from Tubercle.—In the western counties of England milk has been heated from time immemorial, apparently without any one having raised the point that it might thereby be damaged. The milk is gradually heated over a period of about an hour to 170 F., and then gradually cooled. It may be taken therefore that it is held at over 155 F. for well over half an hour, an exposure quite sufficient to render it tubercle safe. The ordinary method adopted in a Devonshire farmhouse is to heat the milk in earthenware pansions holding about 6 quarts each on the top of the hot plate of the closed range. The method is such that interference with the vitamin content of the milk need not be feared.

Lancet, London

2: 693-734 (Oct. 3) 1925

*Postural (Orthostatic) Albuminuria. J. W. Russell.—p. 683.
Cures of Aesculapius. E. A. Gardner.—p. 688.
Human Touch in Professional Life. J. H. Beith.—p. 691.
Student-Habit. A. Keith.—p. 694.
Surgical Treatment of Brachial Birth Palsy. J. Gilmour.—p. 696.
*Rheumatic Disease in Childhood. M. O. Raven.—p. 699.
Two Cases of Lateral Sinus Thrombosis. D. J. Collier.—p. 700.
Atrophy of Renal Origin in Young Infant. C. Chisholm and E. F. Willock.—p. 701.

Postural Albuminuria.—By the term postural (or orthostatic) albuminuria, Russell means nothing more than an *albuminuria which develops in the upright position and ceases* when the patient lies down. Many patients suffering from scarlet fever, who present no albuminuria during the period of rest in bed, develop an orthostatic albuminuria immediately after getting up. Some, at any rate, of these albuminurias persist for a considerable time, or even permanently. Some cases of recognized scarlatinal nephritis are ultimately represented by an albuminuria of the orthostatic type. Orthostatic albuminuria may follow other forms of specific infection, or even, though rarely, arise as the end-result of a mild acute nephritis of ordinary type. The proportions of serum globulin and serum albumin are not constant in cases either of orthostatic or nephritic albuminuria, and do not enable a differential diagnosis to be made. It is suggested that in many cases the orthostatic reaction is the result of slight renal damage. But cases probably exist in which the reaction is the result of mechanical causes. As a matter of speculation, it is suggested that in these cases the albumin comes from one kidney only. Some response to posture occurs in most cases of nephritis and possibly in all forms of albuminuria. All degrees of diminution of the output of albumin during rest in bed are met with, down to the complete cessation of the typical orthostatic cases. Orthostatic albuminuria is probably of more frequent occurrence than is generally supposed. It may pass unrecognized owing to (1) the presence of a small quantity of albumin in the morning specimen of urine due to the continuance of the upright albuminuria for half an hour or so after going to bed the night before and the consequent contamination of the night's collection; (2) the cessation of albumin excretion during diuresis, even in the upright position, and (3) the cessation of albumin excretion in the sitting position. Extreme variations in the albumin output, with at times complete cessation, are therefore to be expected.

Rheumatic Disease in Childhood.—The Horsdall hospital wards of St. Mary's Home, Broadstairs, have since 1921 admitted ninety-two cases of rheumatism, carditis and chorea. Their treatment has been the provision of fresh air, sunlight, warmth and good food, combined with an amount of rest varying in accordance with the amount of active infection. This entails regular medical supervision and food nursing management to insure contentment of the children while under considerable restraint. The treatment aims at preventing or arresting the progress of rheumatic infection, especially in the heart. At the end of certain periods, depending at best on clinical and at worst on financial considerations, the children are returned home. Subsequently, by means of circulars, the discharged patients are sent for and reexamined in London. Raven reports very favorable results in these cases.

Archives Médicales Belges, Brussels

78: 1-53 (Jan.) 1925

Diet in Heart Disease. Lombard.—p. 1.
*Calcium Chlorid in Exudative Pleurisy. Thoné.—p. 11.

Calcium Chlorid in Treatment of Exudative Pleurisy.—Thoné applied calcium chlorid in treatment of twenty-three patients with serofibrinous pleurisy. In eleven cases the fever subsided and the effusion disappeared in three to six days after beginning the treatment and there has been no recurrence of either fever or effusion. The improvement was slower in five other patients, and no effect was noted in four to whom the calcium chlorid was given on the eighth or tenth day of the disease. The best results were apparently obtained in tuberculous pleurisy. This treatment is based on the elimination of the sodium ions and subsequent dehydration, and their replacement by the calcium ions. Therefore the diet should be sodium-free so far as possible. A dose of 15 gm. of calcium chlorid is given the first day; if the fever persists, it is increased to 22 gm. by the third day, and continued for two or three days. Otherwise, only 7.5 gm. is given the second day. Even the large doses were well tolerated. He adds that calcium chlorid treatment proved effectual also in Garoféano's two cases of tuberculous exudative peritonitis.

Bulletin de l'Académie de Médecine, Paris

94: 855-878 (Oct. 6) 1925

Necessity for Study of Ways and Means to Make Railroad Travel Safer. M. de Fleury.—p. 865.
Occupational Injury from Handling Cement. M. Baudouin.—p. 869.
Hyperepinephrinemia and Cerebral Embolism. A. Tournade.—p. 875.

94: 879-900 (Oct. 13) 1925

Case of Calculi in Both Kidneys. P. Bazy.—p. 881.
*Operation for Angina Pectoris. Daniélopolu and Marcu.—p. 884.
Two Cases of a Pulmonary Mycosis, n. sp. A. and R. Sartory.—p. 893.
Hydatid Cysts of the Pancreas. Auvray.—p. 894.
Uremia After Intraspinal Anesthesia. J. Abadie.—p. 897.

Surgical Treatment of Angina Pectoris.—Daniélopolu and Marcu's experiments on dogs as well as postoperative observation of clinical cases of angina pectoris demonstrated that removal of the stellate ganglion induces grave changes in the electrocardiogram. The phenomena show pronounced disturbances of ventricular conductibility, and degeneration of the myocardium. Jonnesco's operation in which, besides the cervical also the stellate ganglion is removed, is too dangerous. They advise a technic which, although suppressing a large number of cardio-aortic sensory fibers, does not damage the important centrifugal fibers that traverse the stellate ganglion.

Bulletin Médical, Paris

39: 1065-1084 (Oct. 3) 1925

Drug Addiction and the Will Power. A. Rodiet.—p. 1071.
Prevention of Postoperative Hemorrhage with Prostatectomy. R. de Butler d'Ormond.—p. 1072.
*Acute Intestinal Invagination in Infants. A. Tierny.—p. 1073.
Colloidal Extract of Tubercle Bacilli in Treatment of Surgical Tuberculosis. Grimberg.—p. 1073.

Acute Intestinal Intussusception in Infants.—Tierny believes that this may be due to a congenital predisposition the same as hypertrophy of the pylorus. It occurs chiefly in apparently healthy boys, aged from 4 to 7 months. The operation succeeds in 90 per cent. of the cases if it is made within twenty hours. Death may follow in 90 per cent. if it is made later. The child should be under clinical and radiologic surveillance for a few years after recovery so that consecutive intestinal stenosis may be recognized in time.

Bulletins de la Société Médicale des Hôpitaux, Paris

49: 1299-1308 (Oct. 9) 1925

Enchondroma of Right Bronchus. G. Caussade et al.—p. 1299.

49: 1309-1326 (Oct. 16) 1925

*Pineal Tumor in Adult. Alajouanine et al.—p. 1309.
*Associated Hemophilia and Hemogenia. Emile-Weil and Isch-Wall.—p. 1314.
*Wassermann Test in Malignant Endocarditis. Landau and Held.—p. 1322.

Diagnosis of Tumor in Pineal Gland in Adult.—The diagnosis was made by Alajouanine and his co-workers in a man, aged 26. Signs of intracranial hypertension had been noted for three years, gradually progressive irregular headache, dizziness and torpor, with diplopia and other ocular disturbances including paralysis of the motor oculi. Recurring attacks of sudden and profound sleep formed a characteristic feature of the case, preceded by a disagreeable sensation in the supra-orbital region. This syndrome was gradually followed by changes of the hearing, pains of the thalamus type, cerebellar gait and slight trigeminal disorder. The association of ocular motor disturbances and narcolepsy had suggested epidemic encephalitis at first. The symptoms indicated that the tumor was probably located in the area of the corpora quadrigemina. Roentgenograms revealed a calcified tumor of the pineal gland, apparently a teratoma. Immediate decompressive trephining is to be followed by deep radiotherapy of the pineal region.

Associated Hemophilia and Pseudohemophilia.—Emile-Weil and Isch-Wall report two cases, in a boy and in a man, in which phenomena of hemophilia, namely, hematoma, hemarthrosis and retarded blood coagulation coexisted with hemogenia, manifest in the prolonged bleeding time (from twenty minutes to five hours). The disease appeared to be congenital in both, and familial in one of the patients. A similar dual blood condition may be observed in other pathologic conditions, particularly in grave jaundice when hemorrhagic purpura coincides with retarded coagulation of the blood.

Positive Wassermann Test in Slow Malignant Endocarditis.—In Landau and Held's thirty cases of endocarditis lenta the Wassermann test was positive in ten, including six absolutely free from syphilis, as confirmed by clinical examination and necropsy. The differential diagnosis from syphilitic aortitis was based on the fever curve, the secondary anemia, enlargement of the spleen, and history of articular rheumatism. Specific treatment for syphilis provoked aggravation of hemorrhagic nephritis in one of their cases, and of the endocarditis process in Kaldewey and Flatter's patient. The positive Wassermann test in these cases should be considered as an incidental and secondary phenomenon of a disturbed colloid or lipoid balance in the serum.

Marseille Médical

62: 1449-1492 (Sept. 15) 1925

*Arteriosclerosis of the Uterus. P. Moiroud.—p. 1450.
The Anaphylaxis Theory of Menstruation. L. Trifaud.—p. 1453.
Development and Treatment of Extra-Uterine Pregnancy. Arnould.—p. 1466.
Bilateral Extra-Uterine Pregnancy. Robiolis and Henry.—p. 1478.
Tuberculosis of the Adnexa. G. Salen.—p. 1481.

Hemorrhage from Arteriosclerosis of the Uterus.—Moiroud calls attention to these hemorrhages which, although more frequent at the menopause, may occur also in young women. This metrorrhagia should be differentiated from that caused by arterial hypertension. The hemorrhage is the chief symptom; it is persistent and refractory to medical treatment. The diagnosis is based on the absence of positive clinical findings. Dilatation of the capillaries and sclerotic degeneration of the walls of the vessels are the characteristic lesions. Medical treatment is futile, but radium may possibly replace hysterectomy which hitherto has been the only reliance.

Médecine, Paris

6: 909-984 (Sept.) 1925

Biology in 1925. J. Gautrelet.—p. 909.
Importance of Ultrafiltration for Biologic Research. L. Blum and M. Delaville.—p. 917.
*Lactic Acid of Blood under Respiration. Binet and Collazo.—p. 924.
Phosphorus and Carbohydrate Metabolism. H. Bierry.—p. 928.
Rôle of Sodium Chlorid in Vital Phenomena. W. Mestrezat.—p. 930.
Influence on Reproduction of Deficiency in Fat Soluble Vitamin A. H. Simonnet.—p. 935.
Recent Physicochemical Research on Cancer. C. Sannié.—p. 941.
Glycosuria of Tuber Cinereum Origin. A. Le Grand.—p. 947.
Alkali Reserve. P. Delore.—p. 952.
Estimation of Night Sight in Man. J. Beyne.—p. 960.
Carbon Monoxid Poisoning. Dervieux.—p. 965.
*Visualization of the Appendix. Bretton.—p. 970.

Influence of Respiration on Lactic Acid of the Blood.—Binet and Collazo drew blood simultaneously from the right heart and the carotid of chloralosed dogs. An excess of lactic acid (by 3 to 11 mg. per hundred cubic centimeters of blood) was manifest in the blood of the right heart, as compared with that of the left. Asphyxia increased the content of lactic acid (32 mg. before, and 55 mg. six minutes after the beginning of asphyxia). The increase of lactic acid was still manifest for a certain time after the respiration became normal. Panting for ten minutes reduced the amount of lactic acid from 36 to 20 mg.

Atropin as Adjuvant in Visualization of the Appendix.—The appendix was visible in 18 per cent. of Bretton's twenty-two patients with chronic appendicitis, given only a barium sulphate contrast suspension. After atropin had been given, besides, a positive visualization of the appendix was obtained in 50 per cent. of the thirty-six patients. A dose of 1 mg. of atropin, in an enema, the first hour after the barium, appeared to be the best mode of administration as it combats the muscular contraction and allows penetration of the substances into the cavity of the appendix.

Paris Médical

57: 305-328 (Oct. 17) 1925

Psychiatry in 1925: A. Baudouin and N. Péron.—p. 305.
Dementia Praecox and Schizophrenia. H. Claude.—p. 312.
Classification of Cases of Dementia Praecox. Lévy-Valensi.—p. 316.
Phenobarbital in Treatment of Epilepsy. H. Colin.—p. 318.
Prophylactic Mental Hygiene for Children. G. Heuyer.—p. 319.
Abscesses in Morphin Addicts. E. Gelma.—p. 324.

57: *329-344* (Oct. *24*) *1925*

Therapeutic Meningeal Reactions in Meningococcemia. Merklen et al. —p. 329.
Effects of Lumbar Puncture in Diabetes. F. Rathery and G. Dreyfus-Sée.—p. 333.
*Pituitary Extract in Diabetes Insipidus. Carnot and Péron.—p. 339.
*Epinephrin in Local Anesthesia. B. La Rossa and R. Riccio.—p. 341.

Pituitary Treatment in Diabetes Insipidus.—Carnot and Péron applied the treatment in a man, aged 35, with diabetes insipidus of one year's standing. Subcutaneous injection of 1 c.c. of extract of the posterior pituitary lobe was followed twenty minutes later, by allaying of the thirst, and the output of urine was reduced from 6.5 to 2.25 liters within twenty-four hours. Injection of 1 c.c. of extract of the total gland was less effectual, decreasing the daily amount of urine no more than by 2 liters. The action of the extract ceased after twenty hours. Epinephrin and lumbar puncture did not display any influence in this line. An intercurrent sore throat with high fever caused an effect absolutely similar to that from the pituitary extract. The treatment did not modify conditions in a case of diabetes mellitus with pronounced polyuria. A reduction of secretion of urine was obtained under pituitary extract in certain cases of polyuria in nephritis, but the action here was slow and inconstant.

By-Effects of Epinephrin in Local Anesthesia.—La Rossa and Riccio warn not to use epinephrin with procain in local anesthesia since the epinephrin prevents rapid diffusion of the anesthetic. Epinephrin, used in local anesthesia, caused necrosis of the skin and subcutaneous tissue in fourteen cases on record, and in four of their own cases. It also seemed to be responsible for the hemorrhage in eleven cited and two personal cases, and for fever in a total of six cases.

Presse Médicale, Paris

33: 1361-1376 (Oct. 14) 1925

*Electric Tests in Angina Pectoris. R. Leriche.—p. 1361.
*Tartar Emetic in Pulmonary Hemorrhage. Mattei and Escudier.—p. 1361.

Experimental Research on Angina Pectoris.—Leriche made some of his experiments on a man under local anesthesia, induced for sympathectomy. The anesthetic had not been given deep enough to affect the sympathetic. Subsequent electrization of the left stellate ganglion caused intense pain and oppression in the precordial region and first two or three intercostal spaces. The patient had never had attacks of angina pectoris. The phenomena subsided at once after injection of procain in the same ganglion. In two other cases an electric current applied to the upper part of the left first thoracic ganglion caused sharp pain in the corresponding arm. Applied to the lower part of the ganglion, it caused pain in the heart region. Identical phenomena appeared on squeezing the ganglion, but less pronounced. An attack of angina pectoris occurred in a woman during sympathectomy performed for angina pectoris. The paroxysm ceased immediately after an injection of procain in the left inferior cervical ganglion, although the rami communicantes had not been severed. These facts throw light on the mechanism and treatment of the paroxysm in angina pectoris.

Arrest of Tuberculous Hemoptysis with Tartar Emetic by the Mouth.—Mattei and Escudier obtained successful results in eleven cases of grave pulmonary tuberculosis with rebelliously recurring hemorrhages. Pills containing from 0.02 to 0.05 gm. of antimony and potassium tartrate, mixed with 0.01 gm. of extract of opium, were given with water an hour before or after meals. The total daily dose was from 0.05 to 0.15 gm.; the treatment was usually continued for five days. In one case the treatment was required for ten days, while in two others one day sufficed. The total of 0.89 gm. was never surpassed in ten days; and the treatment was not resumed before five or six days. A single dose of 0.05 gm. checked the hemoptysis in most cases within a few minutes. In eight cases, briefly transient nausea appeared before the hemorrhage stopped, with vomiting in four. The drug seemed to exert little effect on the arterial pressure, pulse and fever. The appetite did not decrease. The restriction of the diet to iced milk was prolonged for two days after the hemorrhage ended. The treatment proved to be harmless. The drug possibly may induce a vasomotor reflex, of gastric origin, in the lung vessels, while exerting a depressing action on the right heart, as well as a direct action on the smooth fibers of the lung vessels.

33: 1377-1392 (Oct. 17) 1925

*Hay's Test and Liver Insufficiency. E. Doumer.—p. 1377.
*Venous and Arterial Pressure. M. Hélouin.—p. 1378.
Radiations in Biology: Phototherapy. J. L. Pech.—p. 1387.

Hay's Test Does Not Show Liver Insufficiency.—Doumer tested by Hay's method the urine of ten patients. He concludes that a positive Hay's test does not prove the presence of biliary salts in the urine, since it may occur in persons with normal functioning of the liver. Therefore the theory of dissociated jaundice, especially so far as the bile salts are concerned, should be reconsidered. He has never encountered a case of true dissociated jaundice.

Correlation of Venous and Arterial Pressures.—Estimation of the venous pressure was made by Hélouin, in the last two years, in all patients from whom blood was taken for serodiagnosis. In normal conditions the venous pressure appeared to be about one thirteenth of the systolic arterial pressure. In fifty cases, arterial hypotension was accompanied by venous hypertension. Arterial hypotension associated with venous hypertension was noted in anemia and pretuberculous or tuberculous conditions. A moderate venous hypertension in these cases indicated that the heart functioning was intact, while a high hypertension proved to be a sign of cardiac insufficiency. A normal or slightly lowered venous tension with arterial hypertension was a sign of good compensation on the part of the heart, while high venous tension testified to cardiac insufficiency. Determination of the venous pressure may thus help in diagnosis and treatment.

33: 1393-1408 (Oct. 21) 1925

*Bacteriophage Treatment of Plague. F. d'Herelle.—p. 1393.
*Means to Influence Absorption. L. Binet.—p. 1394.

The Bacteriophage in Treatment of Plague.—D'Herelle reports four cases of bubonic plague treated exclusively by injection of a bacteriophage into the buboes. To 10 c.c. of a bouillon culture of the plague bacillus was added 3 c.c. of fresh bouillon, and it was inoculated with a bacteriophage culture. A dose of 1 c.c. of the filtrate was injected in one bubo; or two injections, each of 0.5 c.c., were given in two buboes. In three patients injected the first day after appearance of a bubo, the general condition improved within a few hours after the injection. Two injections were needed in a case in which the treatment was not started until the third day of the disease. All were grave cases and all rapidly recovered. No other treatment was applied, but the bacteriophage was known to be exceptionally active. D'Herelle suggests to inject 1 or 2 c.c. into the buboes in dubious cases of plague, since it is absolutely harmless. In septicemic and pneumonic plague the injection should be made intravenously.

The heading of the article states that d'Herelle is director of the bacteriologic department of the public health service in Egypt. See also Paris Letter, p. 1653.

Absorbing Properties of Subcutaneous Tissue.—Binet summarizes Beverly Douglas' recent experiments on rabbits, guinea-pigs and frogs which proved that application of strychnin to the abraded skin failed to induce the usual convulsions in the animals, if a concentrated solution of epinephrin (1:10,000) had been previously applied to the abrasion Blocking of absorption occurred also with dyes. Opposite results were obtained with a preceding application of histamin. The power of absorption of the subcutaneous tissue was evidently connected with the vasoconstrictor or vasodilator action of these substances. Binet adds, "What a host of practical deductions can be drawn from this physiologic research!"

Revue Française de Pédiatrie, Paris

1: 261-408 (Sept) 1925

Syphilis of Long Bones in Infants. Péhu and Enselme —p 261
*Alkali Reserve in Tetany of Infants Rohmer and Woringer ——p 290.
The Blood of Infants Lesné and Langle —p 300
Recent Works on Pediatrics in Italy. Péhu —p 343
Idem in Anglo-American Literature E A. Park —p 372 C'en
Recent German Works on Intestinal Flora in Infants V Berg —p 397.

Alkali Reserve in Spasmophilia of Infants.—Rohmer and Woringer's research was made on twenty-one infants with spasmophilia (manifest in fifteen and latent in six), and seventeen other infants with rickets but no signs of spasmophilia. A marked reduction of the alkali reserve was found in most cases of manifest spasmophilia, before as well as during and after an attack. The decrease of the alkali reserve was less pronounced in latent tetany and in rickets There were no further convulsions after seven daily exposures to ultraviolet rays, and the overexcitability of the nerves and muscles subsided by the third week. The amount of calcium in the blood increased at the same time, becoming normal after twelve or fifteen exposures

Schweizerische medizinische Wochenschrift, Basel

55: 929 948 (Oct 8) 1925

*Switzerland in Development of Medicine H E Sigerist —p 929.
*Tuberculosis in Early Childhood W. Tobler.—p 932
Surgical Treatment of Exophthalmic Goiter W Isler —p. 938.
Neutrophils in Pulmonary Tuberculosis J. Stephani —p. 940.
Swiss Law on Narcotics H W Maier —p 941.

Switzerland in Development of Medicine.—Sigerist outlines the history of medicine with special regard to Switzerland He believes that the sober nature and lack of luxury account for the absence of genius among Swiss medical men, but he shows the important rôle played by Switzerland in the interchange of ideas and the training of practitioners

Tuberculosis in Early Childhood.—Tobler discusses the prevention of tuberculosis. Exposure to this infection is the most important factor to be heeded. The so-called cured pulmonary tuberculosis of the adult is frequently a source of infection for the child He has occasionally had difficulty himself in weeding out from the infants' department certain nurses who had been repeatedly treated in sanatoriums and were still coughing.

55: 949 972 (Oct 15) 1925

Operation for Cataract Vogt —p 949
Physical Diagnosis of Pulmonary Tuberculosis F. Oeri —p 951.
Alimentary Anaphylaxis J E Wolf —p 955
*Antigenic Function of Lipoids R Doerr and C Hallauer —p 962.
*Action of Insulin. A Gigon —p 968

Antigenic Function of Lipoids.—Doerr and Hallauer were able to change Forssman's lipoid into a full antigen not only with pig serum but with any other protein, including those from the organs and hemolyzed erythrocytes from rabbits. The fact that intact erythrocytes do not produce the change, speaks, among other facts, against Landsteiner and Simms' hypothesis of the mere strengthening of the "ictus immunisatorius," and speaks for a real chemical combination of the lipoid and protein. These experiments confirm Wolff-Eisner's theory on the mechanism of iodin idiosyncrasy (by coupling with a protein).

Action of Insulin.—Gigon found after injections of insulin a marked decrease of the total carbon in blood (from 10.5 per cent to 9.1 per cent.) and muscles and an increase in the liver. The water content fell in the liver and rose in the muscles. He finds that the changes in the carbon content cannot be satisfactorily accounted for by changes in the glucose and glycogen content. The research was done on rabbits.

Pediatria, Naples

33: 1085 1140 (Oct 15) 1925

Types of Constitutional Differences S Maggiore —p 1085.
*The Diplococcus in Pleurisy R Pastore —p. 1097.
Psoriasis in Children A F Canelli —p 1111
Complicating Infection in Scarlet Fever Sindoni and Guccione —p 1117.
Teething Disturbances A Laurinsich —p 1123

The Diplococcus in Pleurisy.—Pastore isolated from pleuritic exudates a diplococcus which is nearer to the streptococcus than to the classic Frankel type. Yet she concludes that they are identical and only modified by the tissue which they attack

Riforma Medica, Naples

41: 913 936 (Sept 28) 1925

*Wassermann Reaction with Serum from Blisters P Serra Costa —p 913
Calculosis of the Prostate G Balice —p 917
*Much's Granules P F Zuccòla —p 918
Medical Jurisprudence R Pellegrini —p 929.

Wassermann Reaction with Serum from Blisters.—In forty-four subjects Serra-Costa made a comparison between the Wassermann reaction with the blood serum and with the fluid from blisters produced by the application of a cantharides plaster The results were practically identical. This may prove of advantage in securing material from infants

Much's Granules.—Zuccòla admits that Much's granular form predominates in beginning tuberculosis and in the forms with a favorable prognosis

41: 937 960 (Oct 5) 1925

*The Blood Minerals in Cancer R Paolucci —p 937
Serologic Changes During Therapeutic Pneumothorax Marotta —p. 939.
Acidosis and the Alkali Reserve L. Manfredi —p 941.

The Blood Minerals in Cancer.—Paolucci found only a negligible lowering, if any, of the calcium content in the blood in cancer patients. With extensive metastasis, the hypocalcemia was distinct. Roentgen treatment lowered at first and later increased the blood calcium

Boletin de la Soc. de Cirugía de Chile, Santiago

3: 193 215 (Aug 26) 1925

Minor Fractures of the Elbow J Bronfman —p 193
Destruction of Semilunar Cartilage in Knee from Indirect Trauma. Basilio Muñoz P —p 199
*Dermoid Cyst of the Thyroid E Greene O —p 201
The Polya Balfour Partial Gastrectomy for Cancer M Matus M —p 203.
Cancer of the Stomach A Constant and J Rodriguez —p 210

Dermoid Cyst in the Thyroid.—Not a trace of thyroid or parathyroid tissue was found in a cyst, about the size of a small orange, extirpated from the thyroid of a girl of 16 A tumor had been noted in the region since the age of 10, but there was no pain The girl presented nocturnal palpitations and tremor and she complained of some discomfort from the tumor at night The microscope revealed that the parts of the cyst examined were made up exclusively of skin tissue and sebaceous glands Greene says that he has been unable to find any record in the literature of a dermoid cyst in the thyroid

Crónica Médico-Quirúrgica, Havana

51: 335 398 (Sept) 1925

Treatment of Cancer A G Dominguez —p 336
Narcotic Addiction in Cuba Official Report M A Branly —p 345.
Artificial Respiration and Means for Resuscitation in Treatment of Shock L Hevia —p 357
Hygiene in Sugar Plantations O Morales y Patiño —p 367.
*Anomalous Forms of Malaria Leandro Cejas —p 378
*Encysted Gauze Sponge on Spermatic Cord J Lastra —p 384.
Functional Mitral Stenosis F Rodriguez —p 385

Unusual Forms of Malaria.—Cejas says that in his district fully 60 per cent of all the patients he has encountered in eight years of practice had the malarial parasite in their blood. The manifestations of malaria often simulated almost any other disease. The mild masked forms may be predominantly gastric, neuralgic, neurotic, hepatic or hepatosplenic, while the grave, pernicious forms may assume a cerebral, comatose aspect. Of the graver types, the cerebral form with convulsions is most common in Cuba, particularly in children, and this is especially liable to entail blunders in the diagnosis. Muscular contracture and trismus in certain cases suggested acute tetanus. Many cases of sudden death in coma, attributed to cerebral hemorrhage, are in reality due *to cerebral malaria.*

Encysted Sponge Simulating Tumor of Spermatic Cord.—The gauze had been left in the abdomen during a herniotomy three years before. The diagnosis was "recurrence of the hernia and solid tumor of the cord."

Prensa Médica, Buenos Aires

12: 377-424 (Sept. 20) 1925

*Modified Technic for Sympathectomy. Julio Diez.—p. 377.
*Ichthyosis and the Sympathetic System. Castex and Camauer.—p. 404.
Irritation in Connection with Cancer. G. Fichera.—p. 418.

12: 425-460 (Sept. 30) 1925

The Giardia Intestinalis in Disease of Biliary Tract. M. R. Castex and J. C. Galán.—p. 425.
Hypercreatininemia and Its Clinical Import. O. Catalano.—p. 428.
"Syphilis and Banti's Disease." L. L. Resio.—p. 443.
Cosmetic Plastic Operations on the Nose. J. Basavilbaso.—p. 445.
Embryonal Tissues and Cancer Diathesis. G. Fichera.—p. 446.

Sympathectomy in Treatment of Gangrenous and Trophic Lesions on the Extremities.—Diez' profusely illustrated article describes his technic and the excellent results of resection of the sympathetic in the sacrolumbar region or of the chain in the cervicothoracic in twenty-seven patients. Obliterating thrombo-angeitis formed the majority of the cases, but the list included gangrenous processes, habitual acrocyanosis, causalgia, mal perforant, etc. The immediate result was the reduction or total disappearance of the pain. No benefit was derived in five cases, including four of obliterating thromboangeitis (three in syphilitics) and one of arteriosclerotic acrocyanosis. He insists that his method of resection of the sympathetic chain in the upper thorax or sacrolumbar region has decided advantages over periarterial sympathectomy, and over Diez' own method of dissociation of nerve fibers which he published in 1924. The extensive resection which he now practices aims to destroy as much as possible of the vasomotor nerves of the limbs, leaving to the arteries merely their own natural tonus. He thinks that it might suffice to resect the stellate ganglion alone in treatment of trophic or gangrenous lesions on the arms, but he has found it more convenient and regards it as safer to resect with it the middle and inferior ganglions and the intermediate nerve trunk, the latter leading directly to the stellate ganglion. For the leg, he resects the nerve from the second lumbar ganglion to the third sacral. His localization of the vasomotor centers in this region was more anatomic than functional, but the functional outcome has confirmed the accuracy of his deductions. The improvement in the circulation is prompt and far beyond that realized by the other types of sympathectomy. Among his illustrations are two showing an acute Dinkler trophoneurotic gangrenous patch on the heel, consecutive to periarterial sympathectomy on the femoral artery, done to relieve acrocyanosis. The lesion had persisted for a year, rebellious to all measures, but healed with scarcely a trace left in four weeks after the sacrolumbar operation.

Ichthyosis and the Sympathetic.—This instalment of Castex and Camauer's study of the sympathetic from the clinical standpoint is devoted to ichthyosis. They apparently prove—by the three cases reported—that this is a manifestation of abnormal conditions in the vegetative nervous system. Treatment should be addressed to the primary etiologic factors, the upset of the balance in the vegetative nervous system, as systematically as to the skin.

Revista de la Soc. Arg. de Biología, Buenos Aires

1: 291-334 (July) 1925

*Familial Xanthoma. J. Llambías and A. Celesia.—p. 291.
Transmission of Acquired Characters. J. Llambias and D. Brachetto Brian.—p. 299. See abstract, page 1593.
Tuberculous Mesenteric Glands in Child. Acuña et al.—p. 301.
Staining of Ameba in Sections. Ramirez Corria.—p. 310.
Phenomena of Nerve Regeneration and of Softening of Brain Tissue. P. del Rio Hortega.—p. 318.
European Foci of Bilharziosis of the Bladder. Bacigalupo.—p. 324.
*Technic for Capillarography. A. Lacroze.—p. 330.

Familial Xanthoma.—Llambías and Celesia report a case of recurring xanthomas in a young man. Some were removed from the eye, elbows, knees, fingers and toes. The mother had flat xanthelasmas at the angle of both eyes and the father presented a lipoma in the epigastrium. Five of the eight brothers of the young man also developed xanthomas at various points.

Research on the Capillaries.—Lacroze gives illustrations of his device to facilitate capillarography. One wooden block supports the hand and arm, a second block holds the electric light. The pressure on the finger is adjusted with a micrometric thumbscrew, immobilizing the finger without impeding the circulation.

Revista de la Soc. Arg. de Tisiología, Buenos Aires

1: 1-28 (Aug.) 1925

Tuberculosis and Pregnancy. Therapeutic Pneumothorax in the Pregnant and Parturients. A. A. Raimondi and T. González.—p. 1.
*Conjunctivitis in the Tuberculous. I. Lijó Pavía.—p. 14.
Pulmonary Tuberculosis and Diabetes. Associated Therapeutic Pneumothorax and Insulin Treatment. R. A. Izzo.—p. 21.

Etiology of Conjunctivitis with Small Follicles: Its Frequency in the Tuberculous.—Lijó Pavía called attention last year to a mild chronic conjunctivitis of the eyelids with disseminated minute follicles. He claimed that it had not been described before. He now asserts that he found this conjunctivitis in 75 per cent. of 280 hospitalized tuberculous patients and in 83 per cent. of 134 applying for dispensary treatment.

Revista de la Soc. de Med. Interna, Buenos Aires

6: 307-340 (Aug.) 1925

*Creatin and Creatinin in Nephritis. Bonorino Udaondo and Catalano. p. 307.
*Diabetes Refractory to Insulin. Pedro Escudero.—p. 312.
*Cancer of the Larynx. Jorge Leyro Díaz.—p. 322.
Roentgenology of Subphrenic Pyopneumocyst. Castex et al.—p. 333.

Creatin and Creatinin in the Blood in Nephritis.—The creatin content of the blood in fifty patients with kidney disease, whatever its nature, ranged from 1.4 to 10.5 mg. per hundred cubic centimeters of blood, and from traces to 0.4 per thousand in the urine. The corresponding figures for creatinin were from 1.5 to 6.7 in the blood and from 0.3 to 2 in the urine. In twenty normal persons the creatininemia ranged from 0.9 to 1.2 mg. The average of creatinemia was 3.2 mg. Bonorino Udaondo and Catalano tabulate the details of the cases, classified by the nature of the nephritis, and emphasize the lack of concordance between retention of nitrogen and of creatin and creatinin. The creatinemia and creatininemia were moderate in the fatal cases, while the highest retention of creatinin (6.7 mg.) was in two patients with discrete nephrosclerosis who left the hospital much improved.

Diabetes Refractory to Insulin.—Escudero reiterates that the insulin is not responsible for the lack of benefit; the organism is incapable of utilizing it, perhaps owing to the absence of ferments on which the insulin acts. Sometimes, however, the drug may be given at the wrong times in respect to the meals. In two cases described, reducing the amount of proteins allowed full utilization of the insulin, ineffectual before. In another case the tolerance for carbohydrates was temporarily reduced during periods of transient weakening of the heart action.

Denunciation of Tracheotomy with Cancer of the Larynx.—Leyro Díaz' experience with 165 cases of cancer of the larynx has convinced him that laryngectomy, total or partial, done in time, has an encouraging outlook. Only thirty of his patients were operable when first seen, and of these twenty-nine are still living up to two or three years after the laryngectomy, one succumbing to pneumonia. The majority of the others, he says, had consulted physicians in time for radical treatment to have been successful, but none of the physicians suggested laryngectomy. He denounces tracheotomy as worse than futile, while it delays and hampers effectual measures. Fifty-four of the total 165 had been tracheotomized, and two of them committed suicide.

Klinische Wochenschrift, Berlin

4: 1993-2040 (Oct. 15) 1925

*Hypertonia of Smooth Muscles as Cause of Disease. J. Pal.—p. 1993
*Diseases Due to Spirochetes. G. Steiner and J. Steinfeld.—p. 1995.
Auricular Fibrillation. W. von Kapff.—p. 1997.
*Ovarian Preparations. B. Zondek and H. Bernhardt.—p. 2001.
*Prognosis of Diabetes Under Treatment. O. Fischer.—p. 2002.
*The Hyperemia Reaction After Induced Ischemia. E. Wehner.—p. 2005.
Biliary Stasis and Pregnancy. V. Hoffmann.—p. 2008.
Rabl's Method of Precipitation of Lime. R. Böhmig.—p. 2010.
*Circulating Heavy Metals. T. Komiyama.—p. 2012.
*Phagocytic Leukocytes. Bierstein and Rabinovitsch.—p. 2013.
Dual Phase Action of Hormones. H. Zondek and H. Ucko.—p. 2014.
*Calcium Versus Strontium. S. Hirsch and A. Oppenheimer.—p. 2015.
Cultivation of Spirochaeta Pallida. Aristowsky and Hoeltzer.—p. 2016.
*Diabetes and Puberty. Heimann-Trosien and Hirsch-Kauffmann.—p. 2016.
*Surgical Treatment of Peptic Ulcers. H. Finsterer.—p. 2017.
The Hamburg Institute for Ship and Tropical Diseases. Schilling.—p. 2038.

Hypertonia of Smooth Muscle as Cause of Disease.—Pal regards the "hypertonic attitude" of smooth muscle (of the arteries and of the gastro-intestinal tract) as a form of pathologic dissociation between their kinetic and tonic function. It is a neurosis, and the cause of later anatomic changes in the organs, especially the kidneys. In the early stages, a symptomatic treatment, including psychotherapy, is of value. He is pessimistic in regard to the later stages. Venesection should be used only in an acute rise in blood pressure.

Diseases Due to Spirochetes.—Steiner and Steinfeld found only a weak production of antibodies in the blood of rats inoculated with brain tissue from other rats with experimental recurrent fever. The smallest protecting dose of the serum from rats inoculated with blood was 0.2 c.c. (against 0.1 c.c. of spirochetes). The spirochetes which persisted in the brain of animals that had been inoculated with recurrens, were killed by the serum. Consequently they were not serum-fast.

Standardization of Ovarian Preparations.—Zondek and Bernhardt test ovarian preparations by the increase in basal metabolism (up to 15 per cent.) which they cause in castrated women. The authors emphasize the caution necessary in desiccating the substance.

Prognosis of Diabetes Under Insulin Treatment.—Fischer states that insulin has improved the prognosis chiefly in acute dangerous conditions in diabetes. Precoma, and even coma and surgical interventions have lost much of their danger. Yet the general prognosis has not been materially modified.

The Hyperemia Reaction After Induced Ischemia.—Wehner found a smaller beat volume and lower pressure at the radial artery during the hyperemia phase following constriction of the artery. The previous condition was restored after 75-100 beats. Thus the reactive hyperemia is due only to a dilatation of the capillaries. This accounts also for the lowered pressure in the artery supplying the region (lowered peripheral resistance).

Circulating Heavy Metals.—Komiyama modified Sabbatani's experiment for determination of the presence of heavy metals in the circulation. He injected subcutaneously on one leg an emulsion of sulphur, and, on the other leg, an insoluble bismuth preparation. The sulphur stained the tissues dark, thus indicating that it had caught the heavy metal from the circulation. The result was positive also with inunction of a bismuth ointment.

Phagocytic Function of Leukocytes.—Bierstein and Rabinovitsch extirpated the thymus, thyroid or testis in rabbits, and tested thereafter the phagocytic function of the washed leukocytes from a sterile peritoneal exudate. In the controls, about 36.6 per cent. of the cells contained particles of charcoal. After extirpation of the thymus, the index was 27.2. The extirpation of the thyroid or testis had a still greater influence, the average index being below 19, and falling as time went on. Reimplantation of the gland several months later increased the index, although not to the original value. The opsonic influence of the exudate fluid was eliminated by the washing of the cells.

Substitution of Calcium by Strontium.—Hirsch and Oppenheimer found that strontium is not a full substitute for calcium in perfusion experiments on frogs' hearts.

Diabetes and Puberty.—Heiman-Trosien and Hirsch-Kauffmann's patient was a girl, 14 years of age, who recovered from coma under insulin treatment. The glycemia and glycosuria disappeared, while the patient's body showed the signs of beginning puberty (except menstruation).

Surgical Treatment of Peptic Ulcers.—Finsterer reviews the methods and results of surgical treatment of ulcers of the stomach and duodenum. His own guiding principle is that resection is essential in ulcers of the stomach—not only because of the better results, but also because of the comparatively frequent development of cancer, and the impossibility of diagnosing it without microscopic sections. In ulcers of the duodenum, his method of choice is resection of the ulcer, pylorus and two thirds of the stomach. If the ulcer cannot be removed, he resects an even larger part of the stomach. Gastro-enterostomy is reserved only for old people. He requires more and longer observation to decide the question whether the smaller resection with direct uniting of the stomach and duodenum is better than more extensive resection with the modified Billroth II procedure.

Medizinische Klinik, Berlin

21: 1561-1598 (Oct. 16) 1925

*Neurodermitis, Eczema and Internal Disease. S. Ehrmann.—p. 1561.
Topovaccinotherapy in Surgery. J. Citron and H. Picard.—p. 1564.
Myalgia. F. Plate.—p. 1567.
*Intestinal Origin of Pernicious Anemia. W. Jülich.—p. 1570.
Cosmetic Surgery of the Nose. E. Wodak.—p. 1573.
Hypertension. F. Wagner.—p. 1575.
Scaphoid Scapula. Friedel.—p. 1577.
Diseases of Joints. E. Maliwa.—p. 1578.
*Electrolytes and Hormones. E. Kylin.—p. 1580.
*Laryngotracheal Breathing Sound. A. Winkler.—p. 1581.
Pathology of Congenital Syphilis. S. Graff.—p. 1584.
T. Mann's "Zauberberg." E. Stern.—p. 1594.

Neurodermitis, Eczema and Internal Disease.—Ehrmann deals with chronic lichen, which he calls a circumscribed neurodermitis. It begins with itching, then—sometimes not until after years—broad hives appear at the sides and back of the neck. The skin begins to scale and a nummular eczema and pigmentation remain. Urticaria factitia (not a simple red dermography) may be provoked even in the earliest stage. More than 50 per cent. of these patients have gastric achylia or hypochylia, and respond well to treatment with hydrochloric acid. Others have changes in the duodenum, and especially in the appendix or colon. Endocrine glands may be affected in another group.

Intestinal Origin of Pernicious Anemia.—Jülich made cultures from the duodenum of ninety-eight patients, including seventeen with pernicious anemia. Colon bacilli were present in fifteen of the latter group at the first examination; in two at other times. Yet he found them also in more than a third of the controls. Disease of the duodenum or gallbladder seemed to be a predisposing factor. He admits the possibility that achylia is one of the causes of the ascending colon flora, but thinks that injury of the intestine by the anemia contributes to it also.

Electrolytes and Hormones.—Kylin injected 1 gm. of calcium chlorid or 0.1 to 0.2 gm. of potassium chlorid intravenously, and an hour or two later injected pituitary extract, epinephrin or insulin. He found that calcium enhances the rising pressure phase of the epinephrin, but weakens the hypoglycemia phase of insulin action, and the hyperglycemia phase of pituitary extract. Potassium acts the opposite.

Laryngotracheal Breathing Sound.—Winkler concludes from his experiments on models that the character and expiratory accentuation of the laryngotracheal breathing sound are due to the stream of air at the bifurcation. The glottis only strengthens the sound.

Münchener medizinische Wochenschrift, Munich

72: 1767-1814 (Oct. 16) 1925

Surgical Treatment of Sterility. A. Mayer.—p. 1767.
Radium Treatment of Cancer of Uterine Cervix. E. Philipp.—p. 1769.
Medicine and the Cosmos. E. Stern.—p. 1771.
*The Heart Muscle After Sympathectomy. B. Brandsburg—p. 1775.

*Sauerbruch's Method in Amputations of the Arm. Purckhauer.—p 1777.
*Bezssonoff's Reagent for Vitamin C. E Loewy.—p 1780
Filter Assurance in Roentgen Ray Treatment. J. Klein and G. H. Klövekorn —p 1782.
*Venereal Diseases in Russia H Haustein —p. 1783.
Pseudofractures F. Honigmann —p 1789
Apophysitis of Calcaneum F Scheid —p 1792
*Pathogenesis of Megacolon. K Wachendorf.—p 1793
*Puncture of the Sagittal Sinus O. Herz —p 1794
Weight Bearing Disturbances with Artificial Limbs Koetzle —p 1795
Sesquicentennial of Itard H Schroder.—p. 1795.
Medical Secrecy. L Schatz.—p 1797. C'cn.

The Heart Muscle After Sympathectomy.—Brandsburg investigated in dogs and rabbits the histologic changes in the heart muscle after sympathectomy The operation is immediatedly followed by dilatation of vessels, hyperemia, edema, round-cell infiltration and a beginning degeneration of the muscle The degenerative changes—especially loss of striation, etc —are still more pronounced after four months They are limited to the innervated part in unilateral resections. Resection of the depressor nerve in rabbits produced only slight changes He would therefore prefer this operation—provided the therapeutic effect is good—to sympathectomy, against which he cautions.

Sauerbruch's Method in Amputations of the Arm.—Purckhauer has been investigating the remote results of Sauerbruch's method in sixty-eight men. Only twenty-one of them are still using the tunnel through the muscles—but these consist chiefly of the "white collar" men The majority gave up using the prosthesis because of suppuration and pains in the tunnel and loss of strength. They refuse a new operation, which is not to be wondered at since some of them have been operated on three to six times. Most of his patients had been operated on by Sauerbruch personally, and had received a prosthesis from his plant. The results are distinctly worse now than a year ago Purckhauer denies absolutely the possibility that Sauerbruch's method would be of any permanent value to a heavy worker

Bezssonoff's Reagent for Vitamin C.—Loewy confirms in a general way the usefulness of Bezssonoff's simple chemical test for the antiscorbutic vitamin The reaction was always positive with material containing large amounts of vitamin C

Venereal Diseases in Russia.—Haustein describes the organization of the fight against venereal diseases in Soviet Russia, and the laws concerning sexual delinquencies

Pathogenesis of Megacolon.—Wachendorf comments on a typical case of Hirschsprung's disease in a girl, 9 years of age The child had been operated on eight years before for prolapse of the rectum by introduction of Thiersch's ring By an accumulation of circumstances (death of mother, war, with killing of father and military service of surgeon), the ring was left in place The child recovered completely.

Puncture of the Sinus.—After having had excellent results with puncture of the sagittal sinus in 300 infants, Herz observed an instance of a fatal subdural hemorrhage He rejects therefore the method for diagnostic purposes, and reserves it only as the last resource for therapeutic injections

Wiener klinische Wochenschrift, Vienna

38: 1099 1122 (Oct 8) 1925

*Action of Roentgen Rays G Holzknecht and F. Pordes —p 1099.
Dangers of Iodin in Hyperthyroses F. Redlich —p 1102
Psychogenesis of Leukorrhea A Mayer —p 1106
*Diabetes and Pregnancy A. Springer —p 1108
*The Liver and the Protein Quotient of the Serum Fillinski —p. 1110.
Chalazion F. Schubert —p 1111
*Cumulation or Insulin Habit? K Waltner —p 1112
*Intravenous Injection of Congo Red Schonberger and Rosenblatt.—p 1113
Dietotherapy of Tuberculosis. M Weiss —p. 1114

Action of Roentgen Rays.—Holzknecht and Pordes criticize the theory of a stimulating action by small doses of roentgen rays. They have been unable to find any fact which would support this theory, and many facts which are against it.

Diabetes and Pregnancy.—Springer discusses the reciprocal relations between pregnancy and diabetes. The diabetes seems to become graver after a pregnancy. The fetus is frequently abnormally large Premature delivery or cesarean section may be indicated.

The Liver and the Protein Quotient of the Serum.—Fillinski found that in normal serums the globulin content does not make more than 40 per cent. of the proteins In mild forms of insufficiency of the liver, its proportion rises to 50 per cent. In grave forms it reached 60-70 per cent. or more. Yet it was normal in a case of acute phosphorus poisoning, and in a case of fatty degeneration of the liver in sepsis.

Cumulation or Insulin Habit.—Waltner injected young rats daily with nontoxic doses of insulin. All of them died around the twelfth day.

Intravenous Injection of Congo Red.—Schonberger and Rosenblatt confirm to the fullest extent the value of Bennhold's method for diagnosis of amyloidosis. In such patients, 40 per cent. of the dye disappears from the blood within an hour (against 11-29 per cent. in normal subjects). The dye disappears equally rapidly from the blood in nephrosis, but in the latter case it appears in the urine within half an hour.

Zeitschrift für Tuberkulose, Leipzig

43: 169 264 (Sept.) 1925

The Constitution and Tuberculosis C. Coerper.—p 169.
Paths of Infection in Tuberculosis Lange.—p. 176 Reply. Beitzke —p. 183.
Classifications of Pulmonary Tuberculosis. Kaufmann and Beltz —p. 184
*Cellular Reaction to Injection of Tubercle Bacilli. N. L Jiwago and W A Lubarski —p 185
*Complement Fixation and Bacteriology of Exudates. K. Michailow.—p 191
Inhalation Treatment H Beckmann —p 197.
Preventive Tuberculosis Vaccination in Rabbits. Arima et al —p 201. C'td
Tuberculosis Mortality in Lithuania. L Kogan —p 216.

Cellular Reaction to Injection of Tubercle Bacilli.—Jiwago and Lubarski injected tubercle bacilli into the peritoneal cavity of mice and guinea-pigs The exudate contained polymorphonuclear leukocytes, lymphocytes and large mononuclear cells—probably histocytes The latter increased in percentage and developed a phagocytic action. The polymorphonuclears acted in the guinea-pigs only as microphages. The lymphocytes seemed to be passive.

Complement Fixation and Bacteriology of Exudates.—Michailow had excellent results with complement fixation in tuberculous exudates, using Besredka's antigen. The mere cytologic picture is not reliable.

Zeitschrift für Urologie, Leipzig

19: 721 800, 1925

Shorter Lamps or Cystoscopes R Jahr —p 721
Diverticula of the Bladder H. Jarosz —p. 722
*Sexual Neurasthenia and Colliculitis Orlowski —p 734.
The Female Urethra and Prostate O Sachs —p 739.
The Ureter Reflux G Praetorius —p 743.
The Spermatozoa. M Porosz —p 752
Decapsulation of the Kidney. C. H Lasch —p 768

Sexual Neurasthenia and Colliculitis.—Orlowski admits that sexual neurasthenia is not caused by changes of the verumontanum Yet he is convinced that one form of impotence is due to this. It begins with ejaculatio praecox, while the libido is normal or even increases (in contrast to the endocrine type). After a few years (average eight) the erections become weaker. These symptoms are associated with a chronic hypertrophic inflammation of the urethra between the bladder and the verumontanum, which causes a repeated mucopurulent discharge, frequently mistaken for a postgonorrheal process. A feeling of unfinished micturition, with the spreading of discomfort to the fossa navicularis, is another symptom The local changes are more difficult to diagnose He found that these patients are free from neurasthenic symptoms—in spite of their irrational sex life. He thinks that the impotence in these cases is a protection of the spinal cord against the repeated injuries from coitus interruptus and similar acts. The colliculus serves as a buffer station. The other type of protection of the spinal centers is obtained by neurasthenia—the group without colliculitis He believes that this protective action has become necessary because of the increasing influence of the brain cortex over the originally automatic—and consequently purely egoistic—sexual function. He emphasizes that a natural, primitive man would not flatten and prolong the automatic and egoistic curve of the sexual act for the benefit of his partner. This danger occurs only in the already physically declining civilized man, and especially with the predominance of the woman. He recommends local treatment, although he admits that it acts partly and sometimes exclusively as psychotherapy—just like any other treatment.

Zentralblatt für Chirurgie, Leipzig

52: 2337-2400 (Oct. 17) 1925

Exarticulation in Hip Joint. V. Sanchis Perpina and R. Diaz Sarasola.—p. 2338.
*Bile Cyst After "Ideal" Cholecystectomy. E. Pólya.—p. 2341.
Integral Treatment. J. A. Goljanitzki.—p. 2344.
Intestine Disturbances After Laparotomies. E. Liek.—p. 2347.
A Rubber Drain. H. Busse.—p. 2348.
Blocking the Brachial Plexus. H. Hilarowicz.—p. 2349.
A Sound to Aid in Ligating. L. Biener.—p. 2352.

Bile Cyst After "Ideal" Cholecystectomy.—In Pólya's case a cyst containing bile and compressing the common bile duct developed after cholecystectomy with primary suture of the abdominal wall. The grave jaundice disappeared after drainage.

Zentralblatt für Gynäkologie, Leipzig

49: 2289-2320 (Oct. 10) 1925

*Pregnancy Kidney and Nephritis in Pregnancy. T. Heynemann.—p. 2290.
Pyelography in Gynecology. F. Burgkhardt.—p. 2296.
Injury of the Urethra in Childbirth. A. Baidin.—p. 2299.
Küstner's Operation for Fistula. P. Garfunkel.—p. 2307.

Pregnancy Kidney and Nephritis in Pregnancy.—Heynemann finds that the diagnosis of nephritis is made too often in pregnancy. If the symptoms appear in the second half of pregnancy, a "pregnancy kidney" is more probable. High blood pressure, erythrocytes in the urine, oliguria and retinitis do not exclude it. The chemistry of the blood is more important from this standpoint: He never saw more than 60 mg. of residual nitrogen per hundred cubic centimeters of blood in nephrosis gravidarum. Oliguria speaks for true nephritis only when associated with low specific gravity. A history of nephritis (except in former pregnancies) speaks for true nephritis.

Zentralblatt für innere Medizin, Leipzig

46: 969-1000 (Oct. 10) 1925

*Is There a Panacea for Cancer? A. Greil.—p. 970.

Is There a Panacea for Cancer?—Greil points to the striking analogy between cancer and pregnancy. It is remarkable that the progeny in certain viviparous nematodes completely destroy and incorporate the mother's body. Like the embryo, the cells of the tumor acquire their full malignancy by growing. There can be no panacea for cancer. Every case is different. He adds that benefit might result from various procedures, such as calcium chlorid, arsenicals, epinephrin, local injection, etc. He points to Strauss' case of regression of an inoperable cancer of the breast after the patient had poisoned herself with morphin and had slept for ten days. The inanition may have played some part in the case.

Časopis lékařů českých, Prague

64: 1465-1500 (Oct. 10) 1925

Origin and Growth of Loose Bodies in Joints. Brezovnik.—p. 1465. C'td.
Diagnosis of Active Tuberculosis in Children. V. Dvorský.—p. 1469.
Sarcoma of the Pelvis. Saidl.—p. 1473.
*Rhabdomyoma in the Fetus. G. Procházka.—p. 1476.
The Wassermann Reaction in Obstetrics. G. Bazala.—p. 1480. C'cn.
*Tuberculous Peritonitis. I. Stratil.—p. 1486. C'cn.
Prosopothoraco-Omphalopagus from Eighth Week of Pregnancy. F. Horálek.—p. 1490.
*Action of Insulin in Strychnin Spasms. F. Karásek.—p. 1491.

Rhabdomyoma in the Fetus.—Procházka observed multiple rhabdomyomas in the cervical muscles of a 6 months old fetus from a cow.

Roentgen-Ray Treatment of Tuberculous Peritonitis.—Stratil had fair results with roentgen-ray treatment in seven of eight cases of tuberculosis of the peritoneum.

Action of Insulin in Strychnin Spasms.—Karásek found that frogs injected with insulin recovered from strychnin poisoning much more rapidly than the controls. Yet when he used insulin after the beginning of the spasms, the frogs died while the controls recovered.

Acta Pædiatrica, Upsala

5: 1-222 (Oct. 22) 1925

*Prevention of Rickets. I. Jundell.—p. 1.
*Rickets and Craniotabes. J. A. Höjer.—p. 16.
Weight of Infants at Stockholm. J. A. Höjer.—p. 59.
*Phosphate Tetany. K. O. af Klercker and M. Odin.—p. 79.
Various Tuberculin Tests. H. R. Krogsgaard.—p. 103.
*Spasmophilic Pseudopertussis. W. Wernstedt.—p. 126.
Obliterating Endophlebitis of the Liver. E. Böttiger.—p. 144.
*Choking from Hypoplasia of the Mandible. E. Lenstrup.—p. 154.
*Scarlet Fever. I. Jundell.—p. 166.
*Calcium Dialysis from Milk. Y. Zotterman.—p. 180.
*Fat Absorption and Calcium Metabolism in Prematurely Born Infants. G. Muhl.—p. 188.
Correction. G. Muhl.—p. 224.

Prevention of Rickets.—Jundell submitted prematurely born infants—the surest candidates for rickets—to a preventive course of treatment with ultraviolet rays, phosphorus and cod liver oil, or yolks. All of these three methods, applied early and for a long period, seemed to be equally effectual in preventing the disease.

Rickets and Craniotabes.—Höjer concludes from the literature and his seventy cases of craniotabes, that the condition is not due to rickets *in the majority* of cases. A constitutional thinness of the bones of the skull may be the cause.

Phosphate Tetany.—Af Klercker and Odin found that the tetanigenic action of phosphates depends on a lowering of the blood calcium—not on an increase of the bicarbonate content of the blood. The threshold of the action is lower in spasmophilia—probably because of the disturbances in the regulation of the blood calcium in spasmophilia. Potassium phosphate has an added stimulating action of the potassium ion. There is no definite relation between the increase in the blood phosphates and the decrease in calcium.

Spasmophilic Pseudopertussis.—Wernstedt's patient had attacks resembling whooping cough in every respect. Yet the child had had pertussis six months before, and the attacks were controlled by calcium, and reappeared when the calcium treatment was discontinued. Another child presented the syndrome whenever it was given whey.

Choking from Hypoplasia of the Mandible.—Lenstrup reports three cases of violent attacks of suffocation in infants, caused by deficient development of the lower jaw, and consequent falling back of the tongue. Cleft palate was present in all of them. Fastening in the child with pillows, so it lay on side and face, prevented the choking attacks, which might otherwise have proved fatal. As the child developed, the tendency was outgrown.

Scarlet Fever.—Jundell had negative results with cutaneous, subcutaneous and pharyngeal inoculations of Berkefeld filtrates from tonsils extirpated in scarlet fever. He prepared a toxin from streptococci, but found that the dilution recommended by the Dicks was usually too weak. When using 0.2 c.c. of a 1 per cent. dilution for the Dick test, he found frequently a positive reaction in scarlet fever patients and convalescents. He had occasion to make the test on 545 Swedish marines. Among them, 111 gave a positive reaction. An epidemic of twenty three cases occurred on their ship; twenty-two of *these had been Dick-positive and a mistake*, he admits, might have occurred in the one listed as negative. This and his other experiences demonstrated the specificity of the Dick test. He remarks that the difficulty of getting sufficiently toxic filtrates may account for the uncertainty of some reactions.

Dialysis of Calcium from Milk.—Zotterman found that an addition of about 50 per cent. of a decinormal solution of hydrochloric acid is necessary to obtain a complete dissociation of calcium in cow's milk. An addition of 10-15 per cent. is sufficient with human milk, because of its lesser amount of buffer substances. He believes that this accounts for the delayed evacuation of cow's milk from the stomach of infants. The strain on the secreting apparatus is four or five times greater with cow's milk.

Fat and Calcium in Prematurely Born Infants.—Muhl found that the lesser absorption of fat in premature infants is only proportional to their lower weight. The retention of the calcium is good, but may be easily deranged by overfeeding.

Hospitalstidende, Copenhagen

68: 769-792 (Aug. 20) 1925

*Loose Bodies in Joints. H. Mathiesen.—p. 777.

Loose Bodies in Joints.—Mathiesen compares the different theories on the etiology of osteochondritis dissecans. He is inclined to accept Bentzon's assumption that a callus-like tissue develops on the basis of a circumscribed hyperemia, the result of traumatic paralysis of local vessels. The injury may be too slight to be recognized as trauma. He describes the case of a young man who seemed to have a constitutional predisposition to production of loose bodies in joints. He was in the hospital five times in seven years for removal of the loose bodies in knees or elbows. Recent roentgenograms show typical osteochondritis in one knee, relics of an old similar process in one elbow, and the findings in the other knee and elbow are suggestive of the same. Nine roentgenograms of this and other cases are reproduced, some showing the predisposing arrangement of the arteries. Removal of the loose bodies is imperative.

68: 793-816 (Aug. 27) 1925

*Acidosis Treatment of Infectious Processes in the Urinary Tract. A. H. Johansen and E. Warburg.—p. 793. C'cn.
Fat and Cholesterol Content of the Blood in Rabbits with Artificial Nephrosis. H. I. Bing et al.—p. 804.

Acidosis Treatment of Infectious Processes in the Urinary Tract.—Johansen and Warburg aimed to render the urine acid in twenty-one cases of this kind, including eighteen cases of colon bacillus pyuria. Calcium chlorid or ammonium chlorid was the main reliance. Twelve of the patients recovered completely under this treatment. It is based on the assumption that the p_H controls the growth of bacteria. Only four patients failed to show benefit, and the inadequate doses explained the lack of success in two of these cases. The third case was a proteus infection. Five patients had no further symptoms but the urine was not sterile. Even if bacteria should be found in the urine on reexamination later, in the apparently cured cases, this may be due to new infection, instead of recurrence, the original source still active. They warn that this therapeutic acidosis should not be attempted if the kidneys are pathologic or there are signs of diabetes. Otherwise there do not seem to be any contraindications. Some patients were nauseated by the drug and a few developed diarrhea. The p_H is tested at the bedside with the Sørensen colorimeter and Cole's comparer. The details of the twenty-one cases are given in full. The usual dose of calcium chlorid was 9 gm. daily, fractioned, in 2 liters of water. Tube casts may appear under this treatment, but this is a transient phenomenon.

Hygiea, Stockholm

87: 721-752 (Oct. 15) 1925

*Achylia Gastrica. H. Öhnell.—p. 721.

Prognosis and Treatment in Gastric Achylia.—Öhnell obtained a positive congo red reaction in forty-three cases with a history of gastric achylia on previous examinations, but the test was negative in 152 cases (22.3 per cent. transient and 78.6 per cent. permanent achylia). His analysis of 419 cases of gastric achylia justifies the assertion that even the repeated determination of achylia over periods up to six years does not necessarily mean that chronic gastritis has definitely annihilated the secretion of hydrochloric acid. The achylia may be merely a secretory neurosis, and this may subside in time. The average age in the transient cases was 39.9 years (one patient under 20), and 44.6 in the permanent cases. Of the twenty-two treated achylic patients less than 30 years old, thirteen presented later the congo reaction again This unexpectedly large proportion of cured cases teaches the importance of early recognition and treatment of gastric achylia. He warns against the danger of giving hydrochloric acid routinely without accurate knowledge as to the exact conditions in the stomach. In three of the cases, a gastric or duodenal ulcer developed during the strong hydrochloric acid treatment, with persisting achylia. He adds that certain patients show a lack of secretion of gastric juice with a test breakfast while there is no evidence of achylia with a test meal including meat. These test-breakfast achylia patients should be advised to refrain from pure carbohydrate meals. One practical conclusion of the research reported is the advisability of keeping stomach tube control of achylia patients, and training patients to submit to it more readily, especially the young.

Ugeskrift for Læger, Copenhagen

87: 841-862 (Sept. 24) 1925

*Diagnosis of Inflammatory Exophthalmos. H. Rønne.—p. 841.
*Sciatica. H. Jansen.—p. 845.
*Hernia as Sign of Cancer. Biilmann.—p. 847.
*Genius Epidemicus in Denmark. A. Magelssen.—p. 848.
Age of Gallstones. S. Hansen.—p. 850.
The Pellagra Question. M. Hindhede.—p. 853.

Diagnosis of Inflammatory Exophthalmos.—Rønne discusses the points differentiating subperiosteal abscess, orbital thrombophlebitis and lesions in Tenon's capsule from collateral orbital lesions induced by pathologic conditions outside the orbit proper. Each requires a different treatment. He has had four cases under observation in which erysipelas of the face had caused bilateral exophthalmos. Some recovered under incision and some without surgical intervention; in the latter case enophthalmos developed later, probably from cicatricial retraction in the orbit. He always found pus when he incised. In three of his four cases the orbital lesions were initiated with a superficial, necrotic abscess in the eyelid. He warns to suspect an orbital lesion with an eyelid abscess; prompt incision may abort the whole. Inflammatory edema of the capsule of Tenon has no characteristic symptoms except their mildness, their connection with rheumatic disturbances elsewhere, and the fact that it sometimes develops on both sides and generally accompanies or follows disturbances in the uveal tract.

Sciatica.—Jansen relates that in 42.5 per cent. of his 200 cases of sciatica, traumatic lumbago had preceded the sciatica, and he is convinced that overstrain of the lumbar or gluteal muscles, some sudden and extreme effort or prolonged strain, is responsible for the initial myalgia. Chilling predisposes to it. He treats sciatica on this etiologic basis, supplementing bed rest and local heat with vigorous massage of the lumbar and gluteal muscles. This cured completely 58 per cent., and 36 per cent. were much improved. Only 2.5 per cent. proved refractory, and these all showed the imprint of a traumatic neurosis.

Hernia as Sign of Intra-Abdominal Cancer.—Biilmann regards the development of a hernia or exaggeration of an existing hernia at the cancer age as a sign of augmented intra-abdominal pressure, suggesting the possibility of insidious intra-abdominal cancer. The tumor sometimes can be palpated in the hernia region, when it escapes palpation at all other points. In some typical cases described, the hernia had been kept under control for years but then became irreducible, and the course of the case confirmed the malignancy.

Genius Epidemicus in Denmark.—Magelssen compares the death rate with the temperature record in Denmark from 1801 to 1920. The mortality is high with low temperatures and low with high temperatures. This is most evident when ten year periods are compared, as conditions leading to death are often at work before the year in which death occurs. The averages of health, sickness and death parallel the external temperature curve, seemingly unmodified by our human institutions, treatment, hygiene and bacteriology. This is Magelssen's sixth communication on comparison of the meteorologic records with the death rate in different countries and cities.

87: 865-880 (Oct. 1) 1925

*Is the Glucose in the Blood Free or Bound? C. Lundsgaard and S. A. Holbøll.—p. 865.

The Glucose in the Blood.—Lundsgaard and Holbøll describe research which shows that the glucose in the blood of normal subjects and also that of diabetics passes through a collodion membrane in apparently exactly the same way. This demonstrates that the glucose is in a free, crystalloid and diffusible form.

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SOME UNRECOGNIZED DANGERS IN THE USE AND HANDLING OF RADIOACTIVE SUBSTANCES

WITH ESPECIAL REFERENCE TO THE STORAGE OF INSOLUBLE PRODUCTS OF RADIUM AND MESOTHORIUM IN THE RETICULO-ENDOTHELIAL SYSTEM *

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The recent report by Hoffman[1] on "Radium (Mesothorium) Necrosis" makes it necessary for us to report our unfinished observations on the danger of the accumulation of radioactive substances in the body and their effect on the hematopoietolytic systems.[2] Hoffman's contribution is based mainly on a survey, from the statistician's point of view, of some five deaths and twelve living cases, occurring among girls employed in painting the dials of watches and clocks with luminous paint. He found that they developed a very *resistant infection of the jaw, with buccal lesions and* marked anemia. His idea was that a distinct occupational poisoning had occurred, the paint entering the body by way of the gastro-intestinal tract as a result of the habit of pointing in their mouths the tips of the brushes used in painting.

The recent illness and death of one of these patients gave us the opportunity, for the first time, of obtaining accurate clinical and pathologic data for this study. In addition, we have under our observation cases ranging in severity from mild ones, showing only slight necrosis of the alveolar borders and without anemia or leukopenia, to severe ones, showing profound anemia with extensive, almost complete destruction of the upper and lower maxilla. In the fatal case we have demonstrated, by means of electrometers, gamma radiation from the body during life and measurable amounts of emanation in the expired air. In the organs after death, amounts of radioactive elements were found, sufficient to be determined quantitatively by alpha radiation and penetrative gamma rays, notably in the spleen, liver and bones, which represent the largest part of the reticulo-endothelial system.

It will be several months before quantitative readings can be completed on these organs and the lesions produced in animals, but we are satisfied that they contain a mixture of mesothorium, with its decaying products, and radium, in what appears to be lethal quantities. In another case, in which there is a well marked anemia, we have shown emanation in the expired air in large and measurable quantities coming from actual deposits of mesothorium and radium in the body, the blood giving off emanation while passing through the lungs. In three other workers, who show at present (Sept. 9, 1925) little or no clinical symptoms and are apparently healthy, we have demonstrated radioactivity in the expired air. In several pieces of necrotic bone removed during life from the lower jaw of a radium worker, we have demonstrated a considerable amount of alpha radiation. This girl died about three years ago of a supposed syphilitic osteomyelitis of the jaw, with profound anemia and sepsis. The dentist kept the pieces of bone because of their unusual size.

This report is published now as a warning that when long lived radioactive substances are introduced into the body, either by way of the gastro-intestinal tract (as they were in these cases), or by way of intravenous injections for therapeutic effects (as is being advocated for the treatment of such conditions as gout, arthritis, arteriosclerosis, leukemia and Hodgkin's disease), death may follow a long time after, from the effects of constant irradiation on the blood-forming centers. Minute particles of the radioactive substances are phagocyted by the local and migratory histocytes of the reticulo-endothelial system and are deposited in the bones, spleen and liver in sufficient amounts to produce, for a period of time, seemingly curative or stimulative reactions, to be followed later by exhaustion and destruction of the blood-producing centers.

Radioactive elements are among the most powerful known agents affecting the hematopoietic system. From the moment of introduction into the body by any channel, they act spontaneously and, according to the element and its quantity, irritate the blood-producing centers to various degrees. Small doses increase temporarily red and white cell production. After a shorter or longer time, small or larger doses cause partial or almost total destruction of leukocytes and a diminution in the erythrocytes, producing a severe anemia that simulates the pernicious anemias of regenerative and aplastic types.

RADIOACTIVE LUMINOUS MATERIAL

The first phosphorescent materials were produced in Europe. After the discovery of radium, phosphorescent zinc sulphid or artificial Sidot-blende activated by the addition of small amounts of radium was used in Germany on watch dials for night visibility. Owing to difficulties in the production of these phosphorescent materials, such products were more or less scientific curiosities, and from 1908 to 1912 were used only in Germany and Switzerland on high class watches. They were not used in the United States until 1913, when there was produced here an article superior to any prior European product. This made possible the development of a large and important American industry for the economic illumination of any desired instrument or object for visibility at night. Since then the industry has employed many hundred men and women in laboratories and plants either producing or applying radioactive phosphorescent material to watches, clock dials, electrical appliances, compasses and aeronautic instruments.

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[1] Hoffman, F. L.: Radium (Mesothorium) Necrosis, J. A. M. A. 85:961 (Sept. 26) 1925.

[2] We have coined the word hematopoietolytic to designate two very important and distinct systems: first, the hematopoietic system, which is composed of the erythroblastic, leukoblastic, thromboblastic and lymphoblastic centers, situated, in the adult, chiefly in the marrow, lymph nodes and spleen, and which forms the main elements of the blood; second, the lytic or reticulo-endothelial system, situated mainly in the same organs, but separate from and adjacent to these centers, the chief function of which is the destruction of erythrocytes and the phagocytizing of foreign particles in the blood by means of its chief cell, the histocyte.

The so-called luminous material consists of crystalline zinc pyrosulphid mixed with various proportions of radium, mesothorium or radiothorium in order to obtain the desired amount of luminosity. According to the U. S. Bureau of Standards and others, radioactive material, depending on its use, contains various proportions of radioactivity, the highest being 1 mg. of radium element or its equivalent to 8 gm. of the zinc sulphid. Paint applied to watches and clocks contains an average of 1 mg. to from 30 to 40 gm. of zinc sulphid.

In this country, at the beginning of the industry, the zinc sulphid was rendered luminous by activation with radium. Later, however, for economic reasons and because of greater practical luminosity, mesothorium and radiothorium were substituted for the more expensive radium. This is of great importance from the toxicologic standpoint. Mesothorium in equilibrium with its radiothorium emits five alpha particles, whereas radium emits only four. The alpha particles of mesothorium and its decayed products have a greater velocity and penetration than those of radium, and therefore are chemophysically and physiologically more active. This fact has been recognized in the therapeutic use of thorium X (by-product of mesothorium), which is more irritating to the blood-forming centers than any other known radioactive element.

The patients in this report have ingested luminous paint, composed of zinc sulphid rendered luminous by activation with about 20 per cent. radium and 80 per cent. mesothorium. The mesothorium contains radiothorium in equilibrium or artificially added to obtain maximum ionization and degree of luminosity.

MODE OF INTRODUCTION

The histories of the workers affected all show that they had worked almost constantly at painting dials for from three to seven years. They painted from 250 to 300 watches a day. It was their practice, for several years and until they were warned to stop, continually to point with their lips the camel's hair brushes which they used. The minimum number of times this was done a day would be about once to a dial, and if the brushes were poor, the maximum might be about fourteen times to a dial. If the brush, when loaded, holds about 5 mg. of luminous paint, on licking, 1 mg. or less, a hardly visible amount, might easily stick to the gums or the roof of the mouth. As the material is mixed with a binder of gum acacia, it is sticky and hard to expectorate. One girl stated that it was gritty and that she always swallowed it. As a working basis, therefore, we can formulate the following: Suppose only 0.5 mg. of paint sticks to the mouth on each pointing of the brush, a worker licking her brush once for each dial and painting 250 watches a day would ingest a minimum of about 125 mg. of paint. If the worker pointed the brush a maximum of fourteen times per dial (and one girl stated that she often licked her brush twice for each watch figure) she would ingest about 1.75 gm. per day. Therefore, it is possible to state that a worker could actually ingest from 125 mg. to 1.75 gm. daily, which would contain from 3 to 43 micrograms of radioactive substances. Working only six months a year, and only five days a week, from 360 micrograms to over 5 mg. of radioactive substances could be swallowed in that time. With an employee working from five to six years, we may easily calculate on a deposit in the bones, spleen, and liver of 1 mg. or more of radioactive elements, allowing for great elimination by way of feces. Thus it appears that these operators were exposed to and could ingest and absorb greater amounts of radioactive elements than are ever given in expectation of therapeutic results. An amount of thorium X of gamma radiation equal to that of 100 micrograms of radium element given either in one dose or split in three has been lethal in sixteen days for an adult.

FATAL CASE

Case 1.—*Rapidly progressing anemia of the pernicious type with leukopenia and terminal infection. History.*—A woman, aged 35, started work as a dial painter, in October, 1917, and was in the habit of pointing brushes with her lips innumerable times a day. In 1923, as a result of instructions issued in the factory, she stopped pointing her brushes. She was quite well at this time except for neuralgia-like pains in the left leg. In 1924, these pains became so severe that she had to use a cane in walking. In March, 1925, she developed a condition simulating pyorrhea and stopped work as a dial painter. She was in fair health until June, 1925 (three weeks before death), when she noticed that she bruised easily. One week later her teeth became sore, and the gums started to bleed. She felt very weak. One week before death, she appeared very anemic, weak and prostrated. For the first time she had pronounced gingival lesions, and the parotid gland on the left side was swollen, hot and tender. Smears from the mouth showed Vincent's organisms and many gram-positive cocci. The hemoglobin was 33 per cent.; erythrocytes totaled 1,400,000; the index was one plus; the leukocytes were 400 per cubic millimeter, with polymorphonuclears 40, lymphocytes 58, and histocytes, 2 per cent. The red cells showed a profound anemia characterized by a large cell anisocytosis, fully one fourth of the cells being macrocytes; polychromatophilia was moderate; granular basophilia was rare. There was an occasional normoblast and a rare megaloblast. The platelets were very markedly diminished. The intense leukopenia was characterized by the presence of a few cells of the myeloblastic and leukoblastic series, the lymphocyte of the normal blood being the predominating cell. The blood serum showed an icterus index of 4.3 (normal, from 4 to 6), and both direct and indirect van den Bergh tests were negative. She was admitted to the medical service of St. Mary's Hospital, Orange, N. J.

Examination.—The patient was found to be acutely ill; the temperature was 102 F.; the pulse, 120, and the respirations, 20. There was marked prostration. The weight was 140 pounds (63.5 kg.) and the height, 65 inches (165 cm.). The systolic pressure was 105 and the diastolic, 65 mm. of mercury. There were marked lesions of the mouth and gums, with bleeding. There was beginning necrosis of the soft palate, gums and cheeks, extending down to the glottis. The skin was pale, and there was no icterus. There were a few large purpuric areas over the lower extremities. The pupils were equal and reacted. The ears were negative. The apex of the heart was in the fifth interspace in the midclavicular line, and there was a soft hemic murmur over the base of the heart. The lungs were clear; the liver and spleen were not palpable. There were no palpable masses in the abdomen; the rectal examination was negative. There were no palpable lymph nodes, except those in the left side of the neck. The reflexes were normal, and there was no clonus or Babinski phenomenon.

Course.—The patient was in the hospital seven days before death. During this time her temperature remained over 101 F. and would reach from 103 to 106 in the evenings. She was profoundly toxic, and toward the end, delirious. At no time were any localized nervous symptoms found. The blood examinations are given in Table 1.

The blood Wassermann reaction was negative. The urea nitrogen was 18 mg.; creatinin, 1.4 mg.; sugar, 128 mg. per hundred cubic centimeters of blood; chlorids were 0.536 per cent. of whole blood. The ionic calcium was diminished. The urine on several examinations showed albumin from 1 to 3 plus, no sugar, no acetone bodies and many hyaline and faintly granular casts, with at times considerable blood (voided specimens). The patient became progressively more septic, and toward the end showed marked sloughing of the roof of the mouth and the posterior pharynx, extending down as far as could be seen. Large areas of ecchymoses and purpuric areas like a toxic purpura appeared over the lower extremities and on the abdomen. The mouth bled as in acute leukemia. She became delirious and died.

Table 1.—*Blood Examinations in Case 1*

Day	Hemoglobin, per Cent.	Red Blood Cells	White Blood Cells	Polymorphonuclears, per Cent.	Lymphocytes, per Cent.	Histiocytes, per Cent.	Eosinophils, per Cent.
12	24	1,344,000	960	52	46	1	1
13	20	1,064,000	840	33	63	4	0
13	Blood transfusion, 750 c.c. of blood, Lindeman method, and 250 c.c. of modified Ringer's solution						
15	30	1,474,000	760	30	70	0	0
16	28	1,424,000	840	33	65	2	0
17	26	1,440,000	880	20	80	0	0
17	Death						

Electrometer Tests Made During Life.—Since the history of the patient's prior occupation, together with the clinical and pathologic picture, indicated radioactivity as a causative agent in her illness, an attempt was made to determine whether it could be demonstrated during life. Tests were made, therefore, to determine penetrative radiation from her body, and to ascertain whether her expired air might contain emanation. The electrometer used in the tests is a specially constructed one of the Wulf type with a silvered quartz thread. It is of very small electrostatic capacity and by the emanation method can be read quantitatively to 0.001 microcurie. This was placed about 18 inches from the chest of the patient and 9 inches above the level of the bed. Readings were then made and showed the following readings: normal leak before test, 10 subdivisions per hour; total leak during test, 14 subdivisions per hour. The difference of four subdivisions per hour was caused by penetrative radiations coming from the body of the patient. The patient was then instructed to pass her expired air, by means of a rubber tube, through two large Woulfe bottles, containing phosphorus pentoxid for absorption of moisture, into the ionization chamber of the electrometer. As she was very exhausted, she could not do this well, and the expired air had to be drawn into the chamber by attaching an aspirating bulb to the second stopcock of the electrometer. This was kept up for five minutes. The stopcocks were closed, and these readings were made: normal leak before test, 5 subdivisions in thirty minutes; total leak with expiratory air in chamber, 20.4 subdivisions in thirty minutes. The difference of 15.4 subdivisions in thirty minutes is due to ionization produced by emanation in the expired air. Fractional readings during the first half hour and readings at the end of two hours show increasing leak due to the growth of the active deposit with characteristics of the radium parent. This, together with the fact that all precautions were taken as to drying the air before introducing it into the chamber of the instrument and that the temperature of the introduced air was about the same as that in the chamber, proves definitely that the leak was not due to any other reason than the presence of emanation.

Necropsy Findings.—Necropsy was performed nine hours after death. The body was not embalmed. It was well preserved and symmetrical; the skin was very pale and waxy in color. The left lower extremity was 4 cm. shorter than the right, and there were many purpuric areas over both lower extremities. The mouth was filled with old, dark clotted blood. Six front teeth in the lower jaw were loose, and a large amount of pus could be squeezed from the gums. The hard and soft palates were covered with sloughing mucous membrane. The left parotid gland was slightly enlarged, and on section, showed no suppuration. Lymph nodes in the left submental region were slightly enlarged, but on section showed no suppuration. The lower jaw was removed in toto and showed beginning necrosis along its alveolar borders. The body of bone was normal. The base of the tongue, the glottis and the epiglottis were free. The trachea showed a few small mucosal hemorrhages. Dissection of the neck showed no suppuration. The subcutaneous fat of the body was well preserved and the muscle tissue a pale red. The abdominal viscera were in their normal position; the mesentery of the small intestine showed a few purpuric hemorrhages. The pleural cavities showed a few old adhesions over the right upper lobe. The pericardium, endocardium and valves were free. The heart muscle was of normal thickness and was a pale yellowish red with indistinct bundles. There were occasional small hemorrhages in the myocardium. The aorta showed a few yellowish, noncalcified streaks of atheromatosis. The coronaries were free. The left lung showed moderate terminal frothy edema and a few petechial hemorrhages in the visceral pleura over the posterior borders. The mucosa of the larger bronchi was pale. The right lung was the same as the left. There was a healed tuberculous reinfection near the apex of the right upper lobe, and a small, calcified primary affect beneath the pleura in the middle of the upper lobe, with the small calcified regional hilium gland. The spleen was slightly enlarged, reddish gray and wrinkled, and measured 14.5 by 8 by 3 cm. There was a slight capsular thickening over the lower pole. On section, the lymphoid tissue was hardly visible; the pulp was a light red and was firm. The suprarenals were of normal size and conformation, with normal lipoidal content in the cortex. The kidneys were normal in size and conformation. The capsules stripped easily, leaving a finely granular surface with an occasional small retention cyst. The cortex in some places was thinner than normal, having a relation to the medulla of 1 to 5. The pelvis showed a few small petechial hemorrhages. The liver was normal in size and conformation. On section, it showed a pale reddish ocher surface, with indistinct markings. The gallbladder was free and clear. The stomach showed innumerable small hemorrhages in the mucosa. The small intestines were free and the lymphoid elements hardly visible. The uterus showed a thickened, dark red endometrium. The tubes were free, as was the urinary bladder. The bone marrow of the lumbar vertebra was light red, with areas of very dark red. Both femurs were removed and split lengthwise; they showed a replacement by dark red marrow throughout the entire shaft. The left femur was about 4 cm. shorter than the right, owing to the fact that its neck formed an angle of 90 degrees with the shaft, but there were no gross pathologic changes. The anatomic diagnosis was anemia of the pernicious type, necrosis of the jaw and sepsis.

Electrometer Tests on Viscera and Bones.—Important organs were chopped up and dried over a sand bath to a slight charring, and pulverized and incinerated in the electric oven at low heat, most organic matter being driven off. Bones were sawed in small pieces and organic matter was burned off in the incinerator. The organs after reduction to ash were placed in bottles and sealed. Bottles containing the incinerated organs, including practically the entire liver, spleen, kidneys, heart and marrow from femurs and lumbar vertebrae were placed around the gamma ray electrometer and readings made. They showed small, but definite penetrative radioactivity. The lower jaw and both femurs showed considerable penetrative radioactivity. Check tests were made on these organs by Mrs. Quimby in the Research Laboratories of the Memorial Hospital, New York. She used an alpha electrometer with a foil leaf, the dried organs being placed in the lower compartment. The normal leak in this case was the time it took the foil to go across the entire microscopic scale. The following readings were made:

Liver: Normal leak 2 minutes, 20 seconds; leak during test, 2 minutes.

Bone marrow: Normal leak, 2 minutes, 18 seconds; leak during test, 1 minute, 15 seconds.

Spleen: Normal leak, 2 minutes, 21 seconds; leak during test, 26 seconds.

Bone cortex: Normal leak, 2 minutes, 18 seconds; leak during test, 1 minute, 21 seconds.

All the material, including the inferior maxilla and the two femurs, was then placed near the gamma electrometer and the following readings were made: normal leak, 28 minutes; leak during test, 22 minutes, 43 seconds.

Positive gamma radiation was therefore present in the organs and alpha radiation was most marked from the spleen, bone marrow, cortex of bone and liver.

Further tests with the alpha ray electrometer showed *almost no radioactivity in the lungs, heart or kidneys.* The gastro-intestinal tract was unfortunately not examined.

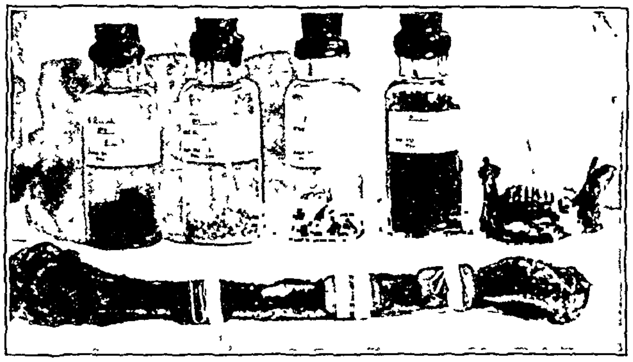

Fig. 1.—Specimens of spleen, bones, marrow and liver in Case 1 ready for qualitative electrometer readings. The dental films containing metal clips, strapped to the split femur and on the inferior maxilla may be noted.

Photographic Films Exposed.—Regulation roentgen-ray dental films were strapped to one half of the femur and over the inferior maxilla, small wire paper clips and pieces of lead being placed between the film surface and the bone (Fig. 1). In six weeks' time they were taken off and developed. Exact shadowgrams of the interposed metal showed on the exposed films. This procedure, when repeated on the inferior maxilla, in sixty hours' time showed a definite exposure of film with hazy shadowgrams.

Histologic Examination.—The details of the histopathology of these cases will be described elsewhere. The main lesions were confined to the organs of the hematopoietolytic systems and chiefly in the spleen and bone marrow, which contained by far the greatest amount of radioactivity. Both showed histologic pictures similar to those seen in pernicious anemia, with this exception, that the evidence of destruction of red cells by the histocytes (hematophages) lining the bone marrow and splenic sinusoids (reticulo-endothelial system) was practically absent. Furthermore, the hemosiderin deposits in the spleen, liver, heart and kidneys were certainly not as pronounced as in most cases of pernicious anemia. This bore out the clinical contention that the anemia was not of the hemolytic type. There was entire replacement of the fatty marrow of the femur by actively regenerating tissue, a marrow hyperplasia of the megaloblastic type. In addition, the spleen showed atrophic malpighian follicles, some of the terminal arterioles having hardly any surrounding lymphocytic mantle. There was diffuse fibrosis and slight increase in hemosiderin pigment. The liver parenchyma presented a small amount of hemosiderin pigment in the outer portions of the lobule and in some of the Kupffer cells throughout the lobules. There was no extensive fatty infiltration. There is absence of the collections of lymphocytes seen in the periportal spaces in most livers and the periportal structures are encased in a noncellular fibroblastic tissue, which fibrosis does not extend into liver parenchyma. In view of the fact that the bile may be an important channel in the elimination of radioactivity, the stagnation of radioactive bile may account for the fibrosis around the periportal space.

In certain respects this case may be said to resemble pernicious anemia. Our concept of pernicious anemia is that the unknown toxin or etiologic agent responsible for the disease causes increased activity of the histocytes of the hemolytic or reticulo-endothelial system, especially of those cells in the sinusoids of the marrow, spleen and liver (hematophages). This increase in phagocytic activity of these cells destroys red cells faster than they can be formed by the hematopoietic system, and as a consequence the blood serum becomes icteric as a result of a hyperbilirubinemia, and the indirect van den Bergh test is often positive owing to increased hemolysis. Pernicious anemia is essentially a hemolytic anemia.

The blood in this case showed a profound anemia, characterized by a large cell anisocytosis, by the presence of megaloblasts and by a marked leukopenia. There was not, however, a hyperbilirubinemia, and the van den Bergh tests were negative. The anemia is, therefore, not a hemolytic anemia. It is not an aplastic anemia, since there is marked embryonal blood formation. The fault lies in a long continued irritation of the hematopoietic system, the hemolytic or reticulo-endothelial system being unaffected. There is a stage of stimulation followed later by sudden exhaustion of the erythroblastic and leukoblastic centers with the production of a rapid, fatal anemia with leukopenia, which fails to be influenced by any form of treatment.

The clinical picture is distinguishable from pernicious anemia by its rapid course, its lack of remissions, the absence of nervous and gastro-intestinal symptoms, and the presence of buccal lesions with necrosis of the jaw similar to that seen in the acute leukemias. The morphologic blood picture is indistinguishable from that of pernicious anemia except for the presence of a thrombopenia sufficient to cause purpura and bleeding. Thrombopenia occurs in pernicious anemia, but is not common. The marked replacement of fatty marrow in the femurs by bright red regenerating marrow is almost pathognomonic of true addisonian anemia. In fact, we know of no other disease characterized by such marked regeneration.

As to the etiology, we feel that we have proved by the demonstration and measurement of radioactive substances in the body during life, in the expired air and in the organs after death that the anemia in this case is dependent on the ingestion, long before, of radioactive paint, and that it is caused by the actual deposits in the spleen, bones and liver of radium and mesothorium with their decayed products. For the foregoing reasons we have designated this anemia as a "rapid anemia of the pernicious type due to radioactivity." Radioactivity in the bones is very clearly shown by the exposure on the dental films.

SEVERE CASE IN PERSON STILL LIVING

Case 2.—*Local lesions with bone necrosis; chronic leukopenic anemia of the pernicious type. History.*—A woman, aged 24, was admitted to the medical service of St. Mary's Hospital in May, 1925, suffering from a chronic anemia with extensive necrosis of the inferior maxilla. She had worked for seven years as a dial painter, during which time she pointed brushes with her lips. About two years before, she had trouble with her teeth and had some extracted. Since that time she has had a persistent, progressive necrosis of the lower jaw, has been anemic and run down, has lost weight and has had intermittent pains in the legs. During the last part of 1924 she was treated in a hospital in Philadelphia for necrosis of the lower jaw of undetermined etiology, and blood transfusion was done without benefit. She returned home and was treated by her family physician up to the time of her admission to the hospital. Her mouth condition was treated with local washes, and hypodermics of iron were given for the anemia.

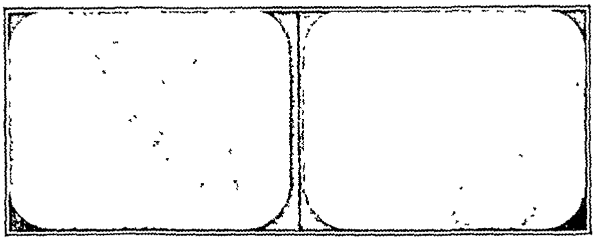

Fig. 2.—Dental films removed from femur in Case 1 after being strapped against bone for six weeks. The exact shadowgrams of metal clips may be noted.

Examination.—The patient was markedly emaciated, anemic and chronically ill, and weighed about 90 pounds (41 kg.). There was a pronounced general pallor. The mouth showed extensive necrosis of the lower and upper jaws, with a fracture of the lower jaw on the right side about the middle of the body. There was marked suppuration about the gums, and most of the teeth were missing or loose. There was a sinus communicating with the right antrum. The hearing in both ears was greatly impaired. The pupils were equal and reacted. The apex beat was in the fifth space, inside the nipple line, with a soft systolic murmur over the pulmonic area. The pulse was small, rapid and irregular. The systolic pressure was 105 mm. of mercury. The lungs were normal. There were no palpable lymph nodes. The spleen and liver could not be felt. The extremities were normal. The reflexes were normal, and there was no clonus of any sort or Babinski phenomenon.

Morphologically, the blood picture was characterized by a profound anemia, in which the color index was usually one plus, by a large celled anisocytosis with many macrocytes, by slight polychromatophilia and occasional granular basophilia, and by the occurrence of a scant number of nucleated reds and a rare megaloblast. Blood platelets were abundant in smears; there was no purpura or bleeding. The various blood examinations are given in Table 2. The icterus index was 5, showing no hyperbilirubinemia. Both direct and indirect van den Bergh tests were negative. The blood coagulation time was thirteen minutes by the intravenous method; the bleeding time was normal. There was no increased fragility of red cells. The urea nitrogen was 12 mg.; the uric acid, 2.2 mg.; the creatinin, 0.9 mg., and the sugar, 90 mg. per hundred cubic centimeters of blood. The blood chlorids were 494 per cent. whole blood. The total calcium was 9 mg. per hundred cubic centimeters. The blood Wassermann reaction was negative. Frequent urine examinations showed a faint trace of albumin and an absence of sugar; microscopic examination showed an occasional hyaline cast.

Table 2.—*Blood Examinations in Case 2*

Hemoglobin, per Cent.	Red Blood Cells	Index	White Blood Cells	Polymorphonuclears, per Cent.
20	964 000	Minus	2,400	64
	Blood transfusion 650 c.c. by direct method			
32	1,952,000	Plus	2,600	69
34	1,984 000	Plus	2,640	56
28	1,544 000	Plus	3,000	61
30	1,664 000	Plus	2,480	60
24	980,000	Plus	2,100	65

Course.—The patient is still in the hospital. For many weeks she showed slight improvement. At the present time she presents a great necrosis of both jaws, the mouth being kept clean by frequent washes and expert dental attention. In this way she suffers only periodic rises in temperature, the temperature usually staying around 99 F. Her lower jaw shows a spontaneous fracture through the body on the right side, and there is necrotic perforation of the hard palate. She presents a picture of a severe local infection which seems to be well controlled, with a profound anemia of the pernicious type with leukopenia.

Electrometer Tests.—The patient passed her expired air by means of a rubber tube through a series of moisture absorption bottles containing sulphuric acid and calcium chlorid into the ionization chamber of the electrometer for a period of five minutes. The stopcocks were then closed and readings begun. They showed the results given in Table 3.

There is a much greater leakage during the first and second ten minute periods than thereafter. This is due to the fact that the expired air contains a mixture of emanation originating from mesothorium with its decayed products and radium. *Definite proof exists in this case of positive radioactivity from the expired air.*

Table 3.—*Electrometer Tests in Case 2*

	33.5	subdivisions	in	1st 10 minutes
	16.2	subdivisions	in	2d 10 minutes
	15.7	subdivisions	in	3d 10 minutes
	16.6	subdivisions	in	4th 10 minutes
	17.7	subdivisions	in	5th 10 minutes
	99.7	subdivisions	in	50 minutes
Normal leak	8.5	subdivisions	in	50 minutes

In this case, instead of the development of an acute *anemia, we can recognize from the clinical history* and course an overstimulative period characterized by loss of weight, bone pains and neuritis, followed by an exhaustion period in which there is first a local irritation at the point of entry (mouth) of the radioactive substances. A gingivitis develops, followed by loosening of the teeth, requiring extraction and then an unhealing necrosis of the jaw. An anemia, with a leukopenia without thrombopenia and low blood pressure, gradually develops until there is reached a chronic stage of a profound anemia of the pernicious type, with extensive localized lesions of the mouth and necrosis of almost the entire lower and upper jaws. The patient is liable to death from any intercurrent infection, especially meningitis, or may die from the progressive uninfluenced anemia. The anemia is of the same type as in the first case, but chronic. It is not a hemolytic anemia, nor is it an aplastic anemia. It is due to exhaustion of blood-forming centers, caused by radiation from fixed deposits of mesothorium and radium in the blood-forming organs.

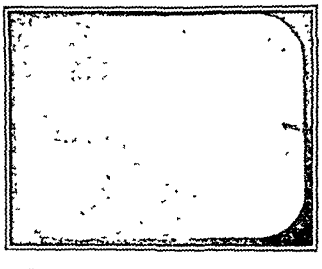

Fig. 3.—Dental film removed from the femur in Case 1 after six weeks' exposure. The exact shadowgram of metal blade of detachable scalpel may be noted. The film is fogged by contamination with oil from the bone.

REPORT OF HEALTHY CASE

Case 3.—*Exposure, with storage in body of radioactive substances, but without apparent effect on health. History.*—A woman, aged 26, was employed as a dial painter and later became an instructor, teaching other girls how to apply the paint. She also painted samples. She always operated with very good brushes and did not pass the brush over the lips and in the mouth as often as other girls. She would lick the brush perhaps once or twice for every two watches.

Examination.—The patient weighed 113 pounds (51 kg.), was 63 inches (160 cm.) tall and did not appear ill. Her general physique was good. There was a slight projection of the inferior angles of the scapulae, and some pain over the left scapula. She had had two teeth extracted for so-called pyorrhea, which was followed by a slight necrosis of the alveolar border. The jaw eventually healed. The pupils were equal and reacted. There were no palpable lymph nodes. The systolic blood pressure was 118, and diastolic 85. The lungs and heart were normal. The liver and spleen could not be felt. The reflexes and the extremities were negative. The physical examination showed no serious defect in any of the organs. The hemoglobin was 80 per cent., the red cells, 4,184,000, and the leukocytes 11,400, with polymorphonuclears 74 per cent. There were no pathologic red or white cells.

Electrometer Tests.—The patient passed her expired air for five minutes through drying bottles into the ionization chamber of the electrometer. Stopcocks were then closed and the readings given in Table 4 made.

Table 4.—*Electrometer Tests in Case 3*

	13.2	subdivisions	in	1st 20 minutes
	8.0	subdivisions	in	2d 20 minutes
	7.8	subdivisions	in	3d 20 minutes
	7.0	subdivisions	in	4th 20 minutes
	6.0	subdivisions	in	5th 20 minutes
	42.0	subdivisions	in	100 minutes
Normal leak	20.0	subdivisions	in	100 minutes

The increased leak in the first twenty minutes is due to decaying mesothorium. The leaks thereafter represent a constant emanation from radium.

This girl, like many others, had a history of exposure to radioactive paint. She ingested radioactive elements during her occupation, enough in fact to cause her blood to throw off emanation by way of the expired air and in measurable quantities, long after she ceased work. Her general physical condition is good and she could at the present time pass a strict medical examination and obtain almost any amount of insurance. Yet she has active deposits of insoluble products of radium and mesothorium in her bones, spleen and liver, which are constantly bombarding her blood-forming centers. Who can tell when she may develop an acute fatal anemia, or a more chronic anemia, with or without local lesions and bone necrosis? She has no severe anemia at present and no leukopenia. She has had neuralgia-like pains and has lost two of her teeth, with a small amount of necrosis of the jaw which under dental care has healed.

SUMMARY

A. *Exposure to Radioactivity.*—The human body may be exposed to radioactivity with deleterious effects in one or more of four main ways:

1. By Penetrative or External Radiation: We have abundant clinical evidence, supported by animal experimentation, of the harmful effects of overexposure, or long continued exposure, to external irradiation by means of the roentgen rays, radium, mesothorium, etc. (roentgen ray or radium and its allied products produce essentially the same biologic effects). The numerous reports of roentgen-ray dermatitis, radium burns, the temporary and fatal anemias in radiologists and radium workers, intestinal injuries and sterility due to atrophic effects on the gonads, all demonstrate the occupational hazards likely to be encountered. Brulé and R. Boulin [3] state that only a few cases of pernicious anemia due to radium can be found in literature, but this severe disease is without doubt more frequent than published reports indicate. We ourselves know of two deaths from severe anemia among radiologists, which have never been reported in literature. Aubertin states that there is a whole group of professional pernicious anemias due to roentgen ray, radium and mesothorium, and that they are of the aplastic type and can be produced experimentally. N. Fiessinger reports that Dominici succumbed to an aplastic anemia due to the habit of carrying radium packages in his pockets. P. Emile-Weil states that long continued doses of roentgen rays, radium or mesothorium are needed to cause these professional anemias. Carman [4] states that Tiraboschi, an Italian roentgenologist, died of an essential anemia due to exposure to roentgen rays. Mottram,[5] in 1920, reported three deaths in radium workers from anemia. We may conclude, therefore, that many cases of fatal anemia have been recognized by clinicians as being caused by exposure to roentgen ray, radium, mesothorium and their allied products. While this suspicion has experimental support, it has never been proved as in the cases herein reported.

2. By Inhalation of Dust Containing Radioactive Substances or by Inhalation of Emanation: There are certain manipulations required in the radium industry, such as tubing and retubing of partly aged radium material, repairing needles, plaques and containers, the preparation of radium and mesothorium and their decaying products for the manufacture of luminous paint, the retubing of needles and the brushing of dishes in which the chemist or worker cannot be properly screened or protected from radioactive dust, or from inhalation of emanation. We ourselves know of deaths from anemia in which this mode of entry played the important etiologic rôle.

3. By Swallowing of Radioactive Substances: In the cases reported in this paper, the mode of entry was through the mouth. As a result of the habit of pointing and licking the brushes used in painting dials, minute particles of the paint stick to the gums, teeth and roof of the mouth, and produce local irritation, setting up in some cases gingivitis, dental infection of a peculiar intractable type and bone necrosis. Most of the paint is ultimately swallowed, and a considerable amount is absorbed by way of the gastro-intestinal tract. Local and migratory histocytes, owing to their marked phagocytic activity for foreign particles, carry these almost colloidal sized particles to the main organs of the reticulo-endothelial system, chiefly the bones, marrow, spleen and liver. There they are deposited, some 80 per cent. of the deposited elements remaining without possibility of ever being eliminated, changed or neutralized, and constantly emitting their charac-

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[3] Brulé, M., and Boulin, R.: Un cas d'anémie aplastique provoquée par le radium, Bull. et mém. Soc. med. d. hôp. de Paris, **49:** 528 (March 27) 1925.

[4] Carman, R. D., and Miller, A.: Occupational Hazards of Radiologist, with Special Reference to Changes in Blood, Radiology **3:** 408-419 (Nov.) 1924.

[5] Mottram, J. C.: Histological Changes in Bone Marrow of Rats Exposed to the Radiations from Radium, Arch. Radiol. & Electrotherap. **25:** 197 (Dec.) 1920.

teristic radiations until they decay years afterward according to their individual life history. These deposits always produce irritative effects. For a considerable time these effects may be thought to be beneficial, as they produce a stimulative period in which there is an increase of both erythrocytes and leukocytes, with perhaps better health. This is followed by a period of overstimulation in which there is loss of weight, low blood pressure, bone pains and apparent neuritis, with beginning reduction in red cells and a leukopenia. An exhaustion period is finally reached, perhaps years after the actual deposition of radioactive elements, in which there is marked leukopenia and either a rapid fatal anemia of the pernicious type or a more chronic anemia, with or without local lesions in the form of bone necrosis and buccal infection. Terminal infections may end life.

4. By Intravenous Injection of Radioactive Substances: For intravenous therapeutic injections, the soluble bromids or chlorids of radium, mesothorium and radiothorium are most used. The first two elements behave the same as barium salts when injected into the blood stream. After reaching the blood, they are precipitated into the insoluble sulphates and accumulate in the organs of the reticulo-endothelial system as fixed deposits.

B. *Effects of Radioactivity When Introduced Into Body.*—Radioactive elements emit so-called positive, negative and neutral (gamma) radiations of which positive charged alpha particles represent over 80 per cent. of the total radium energy. This positive or alpha radiation produces very definite and important chemophysical effects. It is primarily disruptive. It disrupts molecules of any inorganic or organic salt. For example, it decomposes water into hydrogen and oxygen and hydrogen dioxid, and hydrochloric acid into chlorin and hydrogen. Therefore, radioactive elements in so small amounts that beta and gamma radiations are almost negligible, still produce, through their alpha radiation, intense physiologic effects, if given by mouth or by vein. Introduced into the body they form fixed deposits in the main organs of the reticulo-endothelial system, chiefly the spleen, bones, marrow and liver. Here they continuously emit radiations until they decay according to their individual life history. Primarily, in these situations, they act as irritants to the adjacent erythroblastic and leukoblastic centers. They also depress the blood pressure mechanism. Their intensity and physiologic effect vary with the dose introduced and the number and velocity of alpha particles that they emit. The therapeutic use of radioactive substances for the treatment of anemias by introduction into the body through mouth or vein has been based mainly on a supposed stimulative period, in which there was a temporary increase in red and white cells. This, however, is really an irritative phenomenon and is followed in time by overstimulation and exhaustion with consequent anemia and leukopenia. The cell destroying property of radioactive elements has been used to reduce the number of leukocytes in leukemias by internal or intravenous administration of various radioactive preparations. The foregoing characteristics of radioactivity have been recognized and cited by many authorities. Cumulative effects of doses repeated too often over a short period of time, say of two or three months, have also been recorded. Several deaths due to aplastic anemia with almost complete destruction of blood centers, have occurred when thorium X was given for therapeutic reasons. Apart from the specific effect of radioactivity on the blood-forming apparatus, described above, radioactivity has not proved to be a specific therapeutic agent in any condition in internal medicine.

There have been scant, if any, reports, however, concerning the late effects of radioactivity on the body, which are the important and directing factors in radiotherapy. The cases reported in this study demonstrate the importance of, and the possible tragedy due to, the late and largely underestimated effect of radioactivity.

EFFECTS OF RADIOACTIVITY INTRODUCED INTO BODY

SINGLE LETHAL DOSE

1. Local Effect:
   Destruction of local tissue.
2. Generalized Effect:
   Spontaneous anemia with leukopenia, no stimulative period.

SMALL, OFTEN REPEATED, ACCUMULATING DOSES

1. Local Effect:
   Local irritation at point of entry, present or absent.
2. Generalized Effect:
   A. *Period of Stimulation:*
      Erythrocytes and leukocytes increased.
      Good health.
   B. *Period of Overstimulation:*
      Erythrocytes and leukocytes still high.
      Loss of weight.
      Bone pains.
      Nerve pains, probably neuritis.
   C. *Period of Exhaustion:*
      Body defense lowered.
      May develop one of three clinical conditions:
      1. *Rapid Progressive Leukopenic Anemia of Pernicious Type:*
         With terminal infection.
      2. *Chronic Leukopenic Anemia of Pernicious Type with Local Infection:*
         Bone necrosis due to irritated tissues at point of entry and effect of radiation on bacterial flora.
         Death from sepsis or intercurrent terminal infections.
      3. *Chronic Leukopenic Anemia of Pernicious Type:*
         Death from anemia or terminal infections.

CONCLUSIONS

1. The cases described in this paper represent practically a hitherto unrecognized form of occupational poisoning. The anemias encountered are for the first time actually proved to be due to the ingestion of radioactive elements with deposition of insoluble, fixed particles in the phagocytic cells of the sinusoids of the reticulo-endothelial system, where they continuously emit irritative rays, which in time produce exhaustion of the adjacent hematopoietic centers.

2. The necrosis of the jaw, which forms an important lesion in this disease, is due to local irritative radiation at the portal of entry, produced by clinging particles of radioactive substances on the gums, teeth and roof of the mouth, activated by increased bacterial virulence of the organisms in the mouth caused by the irritative or stimulative effects of small amounts of radiation. The increased virulence of bacteria when exposed to small doses of radioactivity is in

itself a subject requiring further investigation. Occasionally the buccal lesions and maxillary necrosis have occurred late in the course of the anemia, but usually they precede the anemia or are early symptoms.

3. We believe this is the first time that radioactivity has been demonstrated in the human body during life by means of electrometers. In the organs after death Reitter, Martland and Barker, in an independent observation, demonstrated the presence of radium, mesothorium and their decayed products, especially in the lungs of a chemist and physicist who had died of an acute leukopenic anemia of the pernicious type, due to the inhalation of radioactive dust and emanation. The quantitative results of this case are about to be published. These two investigations probably represent the first readings of the kind that have been made on human viscera. We have made check tests for alpha radiation with normal tissues prepared the same way as the tissues in these cases, and have found no radioactivity in specimens from spleen, liver, bone, lungs, heart, kidneys, brain, and numerous samples of biliary and renal calculi. It is of particular interest that the examination of both metabolic cholesterin and infectious gallstones was negative for radioactivity, because Lazarus-Barlow of St. Bartholomew's Hospital stated several years ago that he had found certain biliary calculi radioactive, and advanced the theory that cancer of the gallbladder might be at times due to this condition.

4. The electroscope or electrometer, as far as we know, has not hitherto been employed for the demonstration of radioactivity in the expired air. It is of very great clinical importance, since active deposits of radioactive elements can be shown in the human body months and years before clinical symptoms appear. We have made numerous check tests on normal individuals and have never found any radioactivity. In a physicist who has handled large amounts of radium or mesothorium, and who four years ago had a severe anemia with loss of several teeth but is now in very good health, we have been able to demonstrate, even four years after contact with mesothorium, a large amount of emanation in the expired air, coming from mesothorium and radium and their decayed products.

5. After radioactive elements are once deposited in the body, there is no known way of eliminating, changing or neutralizing them. They diminish in amount only according to their individual characteristic decay. Radium takes 1,750 years and mesothorium 6.7 years to reach one half of its original activity. We have been trying to influence the infection occurring in these cases by intravenous injections of rapidly oxidizing colloidal solutions, and to influence the deposits by exposure of the body to quartz light. An individual impregnated with such deposits is always in grave danger of dying from a severe anemia, developing *years after* their original deposition and under conditions in which the real etiology may be obscured or never suspected. We know of five deaths from such deposits in which the cause of death has been variously attributed to sepsis, mouth sepsis, anemia, necrosis of jaw, syphilis and Vincent's angina.

6. There is a voluminous literature on the experimental production in animals of various forms of anemia by the use of radioactive substances. This is a well established fact. The demonstration of radioactivity in such amounts as was found in these cases, taken together with experimental animal work, establishes the cause of the anemia.

7. From our experience, it would appear that the intravenous injections of long lived radioactive elements or the internal administration of radium, mesothorium or radiothorium is highly dangerous on account of the late harmful effects. It is not warranted in any medical condition, as none of the known radioactive substances produce any specific or curative results. The supposed beneficial effects from the early irritative stages might only be countenanced in the treatment of leukemias, Hodgkin's disease, etc., in which the end is expected in a short time. This does not apply to the use of short lived emanation. The value of radium waters is questionable, since most of them at the time they are taken contain little or no radioactivity. Should the waters contain radium or mesothorium in solution, their use would be distinctly dangerous on account of late cumulative effects.

8. An important etiologic factor has been established in the causation of obscure diseases of the blood. We now know that a pernicious type of anemia may be caused by minute amounts of radioactive substances being stored in and adjacent to the blood-forming centers.

9. In view of our experience it would seem advisable to test expiratory air for the presence of radioactivity in all workers in radioactive substances who develop anemia, buccal lesions and similar conditions.

10. In the etiology of obscure blood diseases, it might be easy to conceive of various bacterial and cellular toxins in minute amounts, ultramicroscopic organisms or bacteriophages, producing similar general or selective action on the hematopoietolytic systems. For example, the pathologic stimuli, whatever they are, responsible for Hodgkin's disease, may be very minute in amount and have very selective action, producing increased activity of lymphoblastic centers (hematopoietic system) and increased activity of the cells of the reticulo-endothelial system in the lymph, spleen and bone sinusoids (hemolytic system), resulting in almost a neoplasia, characterized by lymphoid hyperplasia, peculiar multinucleated and giant cells originating from local histocytes of the reticulo-endothelial system, fibrosis, necrosis and eosinophilic infiltration.

Protecting Community Against Fraudulent Practice.—The only satisfactory method of protecting the community from fraud in connection with disease is to insure that every individual who treats disease shall be licensed only after having passed a thorough, satisfactory educational career. Some people have advocated that the medical profession should undertake a scheme of propaganda by film, lecture and otherwise for the education of the public and their protection from unqualified medical practitioners. This might be very desirable, but it does not appear to me that it ought to be carried out necessarily by some organization or other of the medical profession, since this profession would lay itself open to the criticism that it is a trust which is trying to protect itself. It should be done, if considered advisable, either by the General Medical Council in a manner similar to that carried out for the education of the community in dentistry by the Dental Board, or by the Ministry of Health. Perhaps the latter body is the more correct one for this purpose since the General Medical Council is primarily concerned with education; and unless provision is made for the purpose does not possess the necessary funds. Waring, H. J.: Osteopathy, Chiropractic and Medicine, *Brit. M. J.* **2**:682 (Oct. 17) 1925.

VARIATIONS OF THE INTESTINAL RATE *

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The development and the maintenance of the normal tissues are largely due to the assimilation of nutrient substances absorbed from the alimentary canal. The absorption, however, is dependent not so much on the amount of aliment passing along the canal and through the body as on the digested products that pass through the wall of the canal and into the body. Although the extreme complexity of the anabolic processes is far beyond comprehension at present, it is possible to know something about digestion and absorption from the course of the aliment through the canal, and its final molding in the form of the feces.

THE ANABOLIC PROCESSES AND THE INTEGRITY OF THE BODY

The alimentary canal is a highly specialized organ, purposely designed for mixing, reducing and absorbing its contents. The disorders of this organ cannot often be due to imperfections in its mechanism, but are the result rather of the quantity or the quality of the aliment; because in a critical aspect of its action based on the physiology of nutrition, the time of eating, the amount consumed, the completeness, the proportion and the preparation of the food have to be adjusted to elicit the complete cycle of digestion and absorption. But such a complex organ undoubtedly has a protective mechanism—rush peristalsis—by which incomplete and faulty food is rapidly carried through some portions of the intestine, with a failure of absorption. Experimental animals on an incomplete diet often illustrate this action by a diarrhea, after which some form of deficiency disease is produced. These changes, however, are so pronounced that signs and symptoms are observed, and cause and effect are readily recognized.

On the other hand, great variations occur in the time taken for the aliment to pass through the human bowel, or the intestinal rate, without well recognized symptoms; and yet these variations express changes in the amount and kind of absorption and must little by little affect the anabolic processes and the sustenance of the tissues. Perhaps the insidious change shown by the intestinal rate and the form of the feces is the first sentinel to give a warning of a bodily disorder; but if the warning is not observed and corrected, malabsorption continues, the factors of safety in the tissues become exhausted, symptoms are produced, and then some readily recognized disorder is apparent. It seems evident, therefore, when the significance of variations of the intestinal rate are better known and complete and proper nourishment better controlled, that much more may be done to restore and maintain the integrity of the body.

METHODS TO DETERMINE INTESTINAL ABSORPTION

As the anabolic processes appear to be influenced by the course of the aliment, and this in turn is affected by many food factors, a few of these relations have been observed by Gross[1] in experimental animals, and are instructive to consider. He put charcoal into the food of rats and found that the dung of those on a complete diet began to darken in nine hours and continued discolored for 120 hours. Then he tried some of the deficient diets in a similar way. From the animals without vitamin A, the charcoal first appeared in six and was last seen in forty-eight hours; but those without vitamin B lost their appetite and ate very little food, and in small and infrequent dejections sixteen hours elapsed before the dung was discolored, and it continued to be darkened for 384 hours. When the deficiently fed animals were again put on a complete diet and tested, the charcoal took a little longer to appear and disappear. The animals without vitamin A showed a rapid intestinal rate and malabsorption; this was undoubtedly due to the incomplete food. But those without vitamin B showed a very slow rate, which was due to the loss of appetite and insufficient food. Such a rate illustrates the relation between supply and demand, but in this case the relations are extreme. Variations of the intestinal rate in animals have also been observed by Cugnini.[2] He put powdered Brazil nuts into the food of horses, and in thirty-three tests the first appearance of the marker varied between fifteen and twenty hours and was last seen in from seventy-four to 195 hours.

Table 1.—*A Normal and a Rapid Intestinal Rate After Seed Ingestion*

	Rapid Rate	
Sunday	7:00 p. m.	Took seeds
Monday	8:50 a. m.	Soft; first seeds; initial rate, 14 hours
Tuesday	8:20 a. m.	Soft; seeds
	3:00 p. m.	Soft; seeds
Wednesday	8:00 a. m.	Soft; seeds
Thursday	8:15 a. m.	Soft; last seeds; final rate, 85 hours
Friday	8:30 a. m.	Soft
	Normal Rate	
Sunday	8:00 p. m.	Took seeds
	10:00 p. m.	Units
Monday	9:00 a. m.	Units
	3:00 p. m.	Units
Tuesday	11:15 a. m.	Units
Wednesday	10:00 a. m.	Units; first seeds; initial rate, 62 hours
	3:00 p. m.	Units; seeds
Thursday	10:00 a. m.	Units; seeds
	3:00 p. m.	Units; seeds
Friday	11:00 a. m.	Units; seeds
	12:00 p. m.	Units; seeds
Saturday	10:00 a. m.	Units; last seeds; final rate 134 hours
	10:30 p. m.	Units

The time taken for substances to pass through the human intestine is generally supposed to be from twenty-four to forty-eight hours. But in adjusting the diet of many patients to conform with the physiology of nutrition as determined by the unit form of the feces, I[3] found that a marker not only generally took sixty-two hours to appear but also continued to be dejected for 134 hours. Recently Alvarez and Freedlander,[4] in a somewhat similar study with colored beads, found when 85 per cent. were dejected in twenty-four hours that the feces were soft and undigested; but, when 70 per cent. of the beads were retained for a week or longer, that no symptoms of disease were found. Furthermore, when strings with different knots were ingested at the meals, Woods and Merrill[5] found the appearance to vary from ten to fifty-seven hours. Then the supper string was frequently seen before the breakfast string, and in a few instances there was a reversal of the order of the strings taken on different days.

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* From the Skin Clinic of [illegible] General Hospital.

* Read before the Section on [illegible] at the Seventy-Sixth Annual Session of the [illegible] Association, Atlantic City, N. J., May, 1925.

[1] Gross, L.: The Effect of Vitamin Deficient Diets on Rats, with Special References to the Motor Functions of the Intestinal Tract in Vivo and in Vitro. J. Path. & Bacteriol. **27**: 27 (Jan.) 1924.

[2] Cugnini: Esperienze sulla durata digestione nei cavalli, Clinica Veterinaria, Sezione practica Settimanale **31**: 436-440, 1908.

[3] Burnett, F. L.: The Intestinal Rate and the Form of the Feces, Am. J. Roentgenol. **10**: 559 (Aug.) 1923.

[4] Alvarez, W. C., and Freedlander, B. L.: The Rate of Progress of Food Residues Through the Bowel, J. A. M. A. **83**: 576 (Aug. 23) 1924.

Although various markers have already been described to determine the intestinal rate, the action of the human alimentary canal is commonly studied with the roentgen ray after a barium meal. If the rate is to be determined in this way, 4 ounces (125 gm.) of barium may be taken at 8 o'clock breakfast, and then, without further interference with the patient's mode of living, exposures are conveniently made in five, ten, twenty-five, fifty and seventy-five hours. Such a method, however, is somewhat elaborate when numerous tests are required, and the barium may cause an acceleration of rate.[4] The seed test by which all the estimates in this study were made is simple and satisfactory. By this method 50 c.c. of French millet seeds are washed down with water immediately after an evening meal, and then the number of hours noted until five or more are first and last seen easily in the naturally dejected feces. From the time the seeds were ingested until they first appear is called the initial rate, and until they are last seen, the final rate.[3] A rapid rate of from fourteen to eighty-five hours, and a presumably normal rate of from sixty-two to 134 hours are shown in Table 1.

Table 2.—*Rapid Rate Reduced to Slow Rate by Dietary Treatment*

Patient M		Patient N	
Date	Rate	Date	Rate
Dec. 14	15-87	Oct. 14	15-75
Dec. 27	24-108	Nov. 1	27-87
Jan. 2	48-108	Nov. 30	21-92
April 10	58-118	Jan. 3	63-123

Table 3.—*Relation Between Health and Normal Intestinal Rate in a Middle Aged Man*

1923		1924	
Date	Rate	Date	Rate
Jan. 2	87-159	Jan. 1	88-160
Feb 5	88-162	Jan. 27	67-182
March 18	62-182	Feb. 1	110-155
April 15	50-61	March 2	39-134
May 21	88-158	March 31	63-146
June 12	62-158	April 21	43-164
July 8	74-182	May 6	74-158
July 22	62-159	July 27	86-134
Sept. 2	86-134	Sept 22	87-183
Oct. 7	77-158	Oct. 15	86-162
Nov. 4	86-184	Nov. 9	63-209
Dec. 4	74-134	Dec. 1	87-183

As the seeds represent the course, distribution and discharge of the contents of a single meal, they demonstrate a striking difference in digestion, mixing and absorption in the two tests.

RECORDS OF THE INTESTINAL RATE

Although the records of the intestinal rate shown in Table 1 show a great difference, the rapid rate has been changed to a slow rate in many patients by dietary treatment, as illustrated by the records in Table 2. But to make this change the aliment must be reduced in quantity and improved in quality. Then if this kind of absorption and the anabolic process associated with it are generally continued, the condition of the body will become improved, as the skin of many patients with psoriasis has shown.[6] And finally, if the absorption is generally kept at the presumably normal rate of about sixty-two to 134, the integrity of the body is generally maintained. This assumption is borne out by the records shown in Table 3. These records represent the intestinal rates of a middle-aged man, who, except for a few colds of short duration in the winter, has been quite free of bodily disorders. Furthermore, in a comprehensive health examination made recently, a few of the important results obtained were: normal heart, lungs and kidneys; a blood pressure of 110 systolic, and 80 diastolic; hemoglobin, 102 per cent. (Haldane's scale); nonprotein nitrogen, 36 mg.; and sugar, 90 mg. per hundred cubic centimeters of blood. In a test of physical efficiency, 2 miles was covered on foot in twenty minutes.

Table 4.—*Intestinal Rate in Tuberculous Patient During Dietary Therapy*

Date	Rate	Date	Rate
1921		1923	
April 25	15-64	Jan. 18	62-122
May 10	50-114	Feb. 19	62-122
May 19	67-138	March 12	61-121
July 7	64-88	April 2	51-98
Aug. 18	63-111	May 14	62-122
1922		June 11	74-123
Feb. 4	48-72	Aug. 16	74-147
July 29	38-50	1924	
Aug. 1	63-134	Jan. 7	50-110
Aug. 14	74-110	March 10	51-133
Sept 4	62-98	April 19	74-123
Oct. 25	44-92	July 13	61-110
Dec. 12	73-146	Sept. 22	85-122

When a patient has a serious disturbance and is not getting the absorption that should be obtained from the food, he is educated to eliminate the faulty food factors in order to improve nutrition. In Table 4 the intestinal rates of a young man during this form of therapy are shown. In April, 1921, he had extensive tuberculous ulcers of the face and the mucous membrane of the nose. At this time he was eating a large amount of food very rapidly, and had an intestinal rate of from fifteen to sixty-four hours. After he learned how to eat according to the absorption, intestinal indigestion was relieved, two dejections entirely composed of units became customary each day, and the intestinal rate changed to about sixty-two to 134. This kind of absorption has generally continued for three years and, with the anabolic processes associated with it and a small amount of external treatment, has very slowly

Table 5.—*Intestinal Rate Under Dietary Therapy of Man with Psoriasis*

1922		1923	
Date	Rate	Date	Rate
April 8	27-118	Jan. 7	62-111
April 18	50-123	Jan. 22	37-85
May 8	27-86	Feb. 11	37-125
June 15	36-60	Feb. 18	80-125
June 22	36-133	March 4	38-101
June 29	74-136	March 25	63-149
July 31	15-100	April 1	55-124
Aug. 22	63-124	July 15	15-78
Aug. 18	98-146	Nov. 25	39-63
Oct. 30	87-126	Dec. 2	38-100
Nov. 27	40-112	Dec. 17	15-63
Dec. 25	15-79	Dec. 30	38-86

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[5] Woods, C. D., and Merrill, L. H.: Studies in the Digestibility of Bread, etc., Bull. 143, U. S. Dept. Agric. of Expt. Stations.

[6] Burnett, F. L.: Intestinal Indigestion in Eczema and Psoriasis, Am. J. M. Sc. **166**: 415 (Sept.) 1923.

and gradually brought about a healthier condition of his body. He has gained 25 pounds (11.3 kg.) of flesh and blood, and the ulcerated areas have become almost healed.

The figures shown in Table 5 record the intestinal rate of a young man, who in April, 1922, was covered with lesions of psoriasis. He had been eating too much candy and sweet stuff and had taken cathartics regularly for seven years. Dietary directions to relieve intestinal indigestion were given in the hospital, and the skin improved a little. On returning home, he again took up the sedentary occupation of pharmacist, ate a large dinner in the middle of the day, and took too much carbohydrate food. While he has acquired the habit of generally having two dejections daily, he sometimes has intestinal indigestion with soft and formless feces. At times the skin has become almost healthy; then later a few new lesions will appear. In general, however, the condition has improved.

The intestinal rates of a woman, aged 60, are shown in Table 6. In May, 1923, she had been subject to arthritis for a year. She also complained of constipation and had taken cathartics frequently for thirty, and regularly for ten years. Dietary treatment was begun and cathartics were eliminated, but because she was an elderly woman and unable to exercise, she was given two meals of approximately 50 gm. of protein, 50 gm. of fat and 100 gm. of carbohydrate about as follows: from 10 to 10:30, two eggs, two slices of toast, coffee and an apple; from 6 to 6:30, a lamb chop, potato, string beans, two slices of bread and butter, tea, and rice custard pudding.

Table 6—*Intestinal Rate During Dietary Therapy in Patient with Arthritis*

1923 Date	Rate	1924 Date	Rate
May 6 ..	12 63	Jan 25	16 112
June 12	16 64	Feb 25	40 88
July 14	40 64	March 24	16 64
Aug 5	49 96	April 23	37 97
Aug 31	17 65	June 30	37 85
		July 24	37 85
		May 23	37 85

Table 7—*Intestinal Rate During Dietary Therapy of Girl with Psoriasis*

1924 Date	Rate	1925 Date	Rate
June 17	17 88	Jan 5	39 156
July 7	39 135		
Aug 28	15 158		
Oct 6	38 158		
Nov 3	60 155		

After a while she began to have a daily dejection. In a few weeks the intestinal rate became a little slower, and the absorption increased. After a few months the pain and swelling of the joints gradually decreased; in six months she got about on crutches and was then put on a light breakfast and luncheon but a good dinner. These meals consisted of about 50 gm of protein, 75 gm. of fat and 175 gm. of carbohydrate. In a year, without any other form of treatment, she was able to get about without crutches and has gradually walked more and more. Now she does housework and gets about as well as most women of her age.

The figures in Table 7 represent the intestinal rate of a girl, aged 20, who had had psoriasis for ten years. She had eaten irregularly an excess of rich food, and had frequently taken cathartics. Cathartics were eliminated, and she was advised to eat 75 gm. of protein, 75 gm. of fat and 150 gm. of carbohydrate about as follows: from 7:30 to 7:45, one egg, one muffin, one cup of coffee and an orange; from 12:30 to 12:50, lamb stew with vegetables, one slice of bread and butter, and cup custard; from 6 to 6:30, steak, potato, cauliflower, one slice of bread and butter, tea, and tapioca pudding.

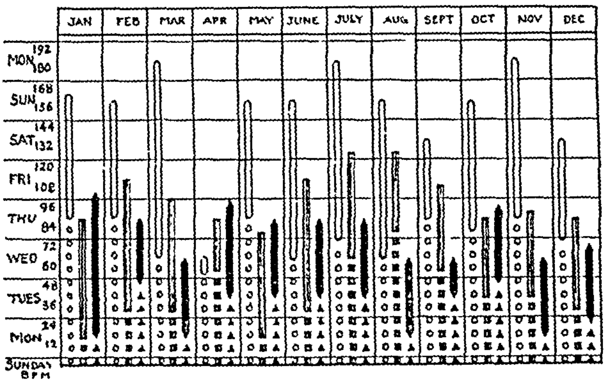

Fig 1.—A graphic representation of variations in the intestinal rate of three patients during a year The broken figures show the hours taken by the seeds to go through the bowel—the initial rate, and the solid figures, the discharge of the seed or the final rate The rounded figures are the rates of Person A, the square, Patient C, and the angular, Patient D.

Within a week the dejections had become regular without cathartics, and the intestinal rate the next week was from seventeen to eighty-eight hours. Since then the intestinal rate has become slower, and the feces have generally been formed in units. At one time she had intestinal indigestion with soft and formless stools and a rapid intestinal rate. The disorder was caused by too much fat food, as bacon, ham, pork, butter and mayonnaise dressing. Then many of the old spots became redder, and a few new spots appeared. A few weeks later, after the elimination of this faulty food factor, she again began to absorb better nourishment, and the lesions have gradually disappeared. She has

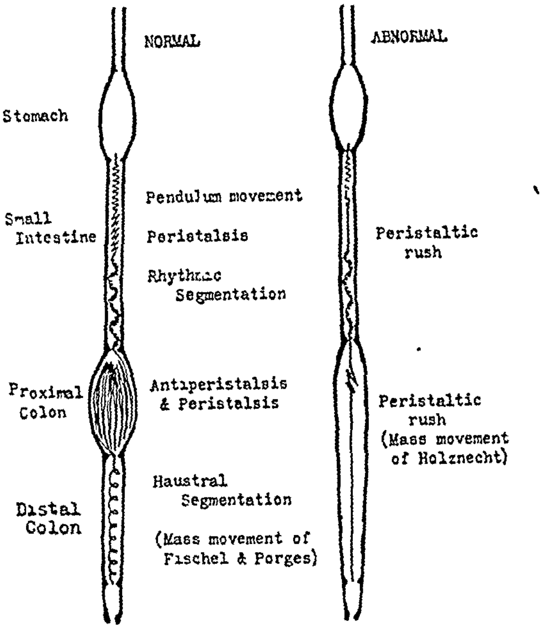

Fig 2—Diagram of the intestinal functions at about sixty-two to 134 hours and fifteen to sixty two hours

been advised to make a determination of the intestinal rate once a month, and to make a record of the food, the time spent at meals, the time and kind of dejections, and a determination of the intestinal rate every few months and report, in order to keep a check on the integrity of her body and to prevent another attack.

THE PHYSIOLOGY OF NUTRITION AND ANABOLIC PROCESSES

The variations of the intestinal rate shown in the tables and graphically in Figure 1 undoubtedly express the delicacy, complexity and diversified action of the intestine in the passage of the aliment through the body. In the complete cycle of digestion absorption, the aliment is worked over by the pendulum movement, coordinated peristalsis, and rhythmic segmentation in the small intestine. About nine hours is required for these actions. In the large intestine the aliment is kneaded back and forth by peristalsis and antiperistalsis in the proximal colon, formed into segments or units in the intermediate, and finally acted on by haustral segmentation in the distal colon. But if the aliment is devoid of one of the accessory or contains one of the faulty food factors, the critical requirements of this automatic and complex organ are not fulfilled, and an abnormal form of action—rush peristalsis—carries it through some portions of the intestine. Many of these intestinal functions are shown diagramatically in Figure 2.

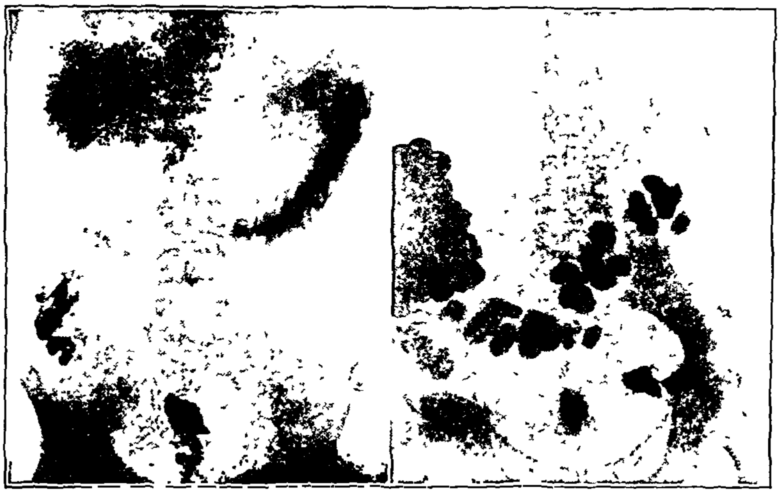

Figure 3. Figure 4.

Figs. 3 and 4.—The colon twenty-five hours after a barium meal On the left, most of the salt has passed through the intestine, and the colon is comparatively useless; but on the right, the colon appears normal by the formation of the proximal, and fecal units in the distal colon.

As the duration of the aliment in the large intestine is the most variable, some phases of the sensitive and intricate colonic functions are interesting to observe and explain. Figures 3 and 4 show two roentgenograms of the colon taken twenty-five hours after a barium meal. In Figure 3 only a small amount of barium remains in the intestine, and with an intestinal rate of about fourteen to sixty-three hours, the colon is a comparatively useless organ. In Figure 4, however, the proximal colon is well filled, there is a break in one portion of the opaque masses, indicating a closure of the constricting rings of the intermediate colon, and discrete masses or fecal units are apparent in the distal colon. The intestinal rate of a colon with this action is about sixty-three to 134 hours and appears normal.

On the other hand, Figures 5 and 6 show the outlines of a colon fifty hours after a barium meal. In Figure 5 most of the barium has passed out of the proximal, but a great deal remains in the distal colon, and in the lower portion units are apparent. A colon of this type may have an intestinal rate of about eighty-seven to 110 hours, and seems to contain an excess of aliment. But in Figure 6, which suggests an even slower rate of about 110 to 209, there is undoubtedly too little aliment in the intestines. This type of patient undoubtedly has a very deficient condition of the body, is from 7 to 10 kg. underweight, has digestive fluids of low potency, and can consume only a small amount of food. In many respects this patient resembles the rats without vitamin B previously referred to.

From the contents of the colon shown in these roentgenograms it is evident that digestion and absorption in this part of the intestine is very variable. Anatomically, the human colon is sacculated with haustra like the herbivora. In these animals, however, the reduction of vegetable substances into flesh and blood requires not only the action of a very complex alimentary canal, but also the action of a blind pouch—the cecum—which "must exercise some important influence on the digestive process."[7] Digestion in the cecum takes a long time; for in the short intestine of a rabbit Alvarez and Freedlander[4] found 26 per cent. of beads ingested in seventy-two hours, 28 per cent. after fifty-two hours, and 14 per cent. given twenty-seven hours previously. As man is omnivorous and needs the prolonged digestion of vegetable substances, some portion of the intestine must fulfil this requirement, and this is undoubtedly the function of the proximal colon. Moreover, in the best known metabolic disorder, diabetes mellitus, there must have been a failure of this essential form of carbohydrate digestion over a long period, as the efficacy of treatment depends largely on very reduced diet. Such a procedure suggests that the benefit is largely derived from improved action of the colon and associated anabolic processes.

In adjusting the diet to the requirements of the body according to the physiology of nutrition, it would seem as if the alimentary canal of adults was intended to receive but two meals—one in the middle of the morning and another in the evening. Such an assumption is explained in this way. If an evening meal were finished at 7 o'clock, it would have completely passed into the colon by 4 the next morning. But during the night the body is at rest, and the tissues must have become seeped with sustenance. Without more food immediately after awakening, all the available nutrient material is in the colon. The activity of the body during the day creates a demand for nourishment; and it is this demand that brings about a closure of the physiologic constriction rings and the waves of antiperistalsis of the proximal colon. The ancient Greeks and the people of Hunza described by McCarrison[8] ate only twice during the day and were known to have been unusually healthy. Moreover, the therapeutic advantage of this regimen has been tried with a few elderly and sedentary patients, as shown in Table 6, and found to be very advantageous. The same action, however, seems to be brought about in most persons if the first meal is divided into a small breakfast and luncheon.

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[7] Flower, W. H: Comparative Anatomy of Organs of Digestion of the Mammalia, M. Times & Gaz. 44: 216, 1872.

[8] McCarrison, Robert: *Studies in Deficiency Disease*, London, Henry Frowde, 1921, p. 9.

CONCLUSION

The development and maintenance of the normal tissues is largely dependent on the assimilation of nutrient substances absorbed from the alimentary canal, and while the anabolic processes are very complex and far beyond comprehension at present, a great deal can be learned about absorption from the course of the aliment through the intestines and its final molding in the feces. The variations that occur in the intestinal rate and the feces are so insidious that symptoms are not often produced; and yet little by little they must influence the anabolic processes and the sustenance of the tissues. Perhaps these variations are the first sentinel to give a warning of a bodily disorder; but if the warning is not observed and corrected, malabsorption continues, the factors of safety in the tissues become exhausted, symptoms are produced, and then some readily recognized disorder is apparent.

Digestion and absorption in the most highly developed organism is an exact process, and many factors have to be taken into account in adjusting the diet to the critical requirements of the body for nourishment. In general, however, when the amount of aliment is reduced and the quality improved in patients with psoriasis, the feces become formed in units, and the intestinal rate changes from a rapid one of from fourteen to sixty-two hours and malabsorption, to one of from sixty-three to 134 hours. When this kind of absorption and the anabolic processes associated with it continue for some time, the skin becomes healthy but remains so only as long as it receives this kind of nutrition.

In this form of dietary treatment the adjustment of the alimentary mixture is merely made to conform to the precise, automatic and apparently normal action of the colon in the physiology of nutrition. By this action the proximal colon is formed by the closure of constricting rings in the intermediate colon. The formation of this digestive pouch appears to be brought about when the demand for nourishment is greater than the supply, and this also excites waves of antiperistalsis. However this may be, prolonged digestion of vegetable substances appears to be essential for the anabolic processes and the normal sustenance of the tissues. It seems evident, therefore, when the significance of variations of the intestinal rate are better known, and complete and proper nourishment better controlled, that much more may be done to restore and maintain the integrity of the body in the complex and sensitive equilibrium of health.

205 Beacon Street.

ABSTRACT OF DISCUSSION

DR. A. J. CARLSON, Chicago: Unless there is delay in gastric and intestinal digestion, about 90 per cent., or more, of the food has already been digested and absorbed by the time the material enters the large bowel, so that from this aspect adequate nutrition is not a question of too brief delay in the colon, but of adequate digestion in the intestine above. Most of us eat enough so that if we secure 90 per cent. out of the food we consume we have sufficient. The essential function of the large bowel seems to be absorption of water (concentration of the material) rather than the absorption of nutrient material. I cannot see any possible advantage of delay in the large bowel over and above that which is required for the concentration of the material. As to the methods of studying the intestinal rate, we must apparently take into account the physical character and specific gravity of the material we add to the foods, as shown recently by Mr. Hoelzel in experiments on himself. If we give material of greater specific gravity than the food, we secure the rate for this material but not the rate for foods. Even seeds may lead to mistakes in interpretation, not as regards the initial appearances in the feces, but the last appearance. Seeds somehow stick to or in the alimentary canal all along the line, and some seeds may remain in an apparently normal person apparently as long as fifteen days. Now, it is absurd to think that that represents the actual time in the intestine of any considerable part of the food. What we have to look for in studies of this kind is the time that the essential mass of the food residue gets through.

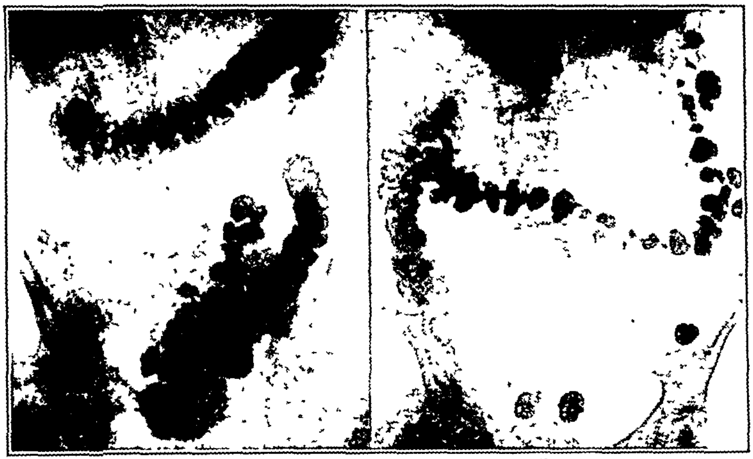

Figure 5. Figure 6.

Figs. 5 and 6.—The colon fifty hours after a barium meal. On the left, the distal colon appears to contain an excess of nutrient material; but on the right, there is too little aliment in the intestine, and an abnormal delay in its passage. (Figure 6 was taken by Dr. James T. Case.)

DR FRANCIS LOWELL BURNETT, Boston: In regard to the 90 per cent. absorption from the small and 10 per cent. from the large intestine, it seems to me that these estimates may not be very accurate. At best, the amount of absorption from one or the other part of the intestine must be difficult to determine. Then, in view of some of the results I have been getting by adjustments in diet to elicit the apparently normal action of the colon as shown by the form of feces, I rather question these figures. Another point in regard to the absorption of fluid as the chief function of the colon: It would seem as if dehydrated children might be greatly benefited if they were fed so that the apparently normal action of the colon were obtained and a great deal more fluid taken into the body.

Sanitary Supervision of International Traffic.—As a means of preventing the introduction of diseases over maritime and land borders, the federal government participates in the international sanitary agreements now in force in the Eastern and Western hemispheres. Officers of the Public Health Service serve as representatives of the federal government at international conferences for the revision of these agreements; also as representatives of the International Office of Public Hygiene at Paris and the International Sanitary Bureau of the American Republics at Washington.—Kerr, J. W.: *Pub. Health Rep.* **40**:1680 (Aug. 14) 1925.

ATTENUATED BONE INFECTIONS

CONSIDERATIONS IN THE TREATMENT OF OSTEOMYELITIS *

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The persistence in the body of pathogenic bacteria to which their host has grown immune is instanced by diphtheria bacilli in the throat and typhoid bacilli in the gallbladder of carriers. That the urethral crypts may harbor gonococci for many years is well known. In the solid tissues, as well as in the cavities and spaces of the body, bacteria may linger indefinitely without symptoms. I have seen *Bacillus pyocyaneus,* a secondary invader, apparently disappear from a wound that continued to heal, only to reappear when the same tissues were opened again several months later.[1] I have also recorded a case of actinomycosis of the groin that appeared four times in twenty years, with six and seven year intervals of complete and apparently definitive healing.[1] The chronic bone abscess is an exquisite example of this longevity of organisms in the tissues, of the attenuation of bacterial virulence and of the long latency of low grades of bone infection. The longevity and latency of typhoid bone invasion are well known. *Staphylococcus aureus,* the common invader of bone, and streptococci may lie dormant in the osseous tissue for many years after the storm of the acute osteomyelitis has passed and then, reactivated, may produce a more or less violent recrudescence of the disease or, more commonly, may reveal their presence by some milder process of suppuration or necrosis.

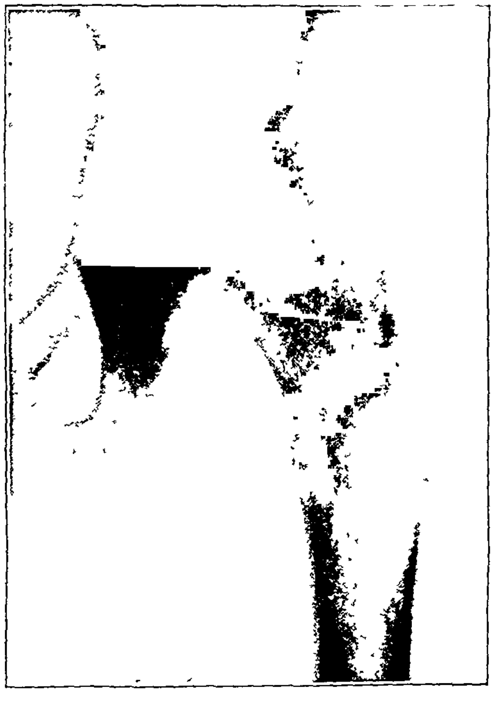

Fig. 1 (Case 1) —Periarticular abscess of right hip, pointing in outer aspect of thigh, two years after acute osteomyelitis of left femur: "silent" inflammatory changes in acetabulum.

These phenomena of latent, attenuated infection are to be observed not merely in the same bone but also in one or in several distant bones. The involvement of two or more bones in rapid succession in acute osteomyelitis is not at all uncommon. Metastatic bone infections of the attenuated type, however, are more often latent, evidencing their presence after intervals of many months. This type of disseminated, avirulent bone infection, Phemister[2] of Chicago described under the apt title of "Silent Foci of Localized Osteomyelitis." He emphasized that localized osteomyelitis may begin "silently" and proceed to the stage of complete destruction of the bony area involved, with surrounding new bone formation, before there are any local symptoms whatever. This condition, he says, is apt to be found in patients in whom some focus of bone infection has remained active. It seems to me a question, sometimes, whether such a distant process is a late metastasis at about the time symptoms develop, from a focus not yet extinct, or whether it is a dormant or "silent" metastasis that took place long before; viz., at the time of the acute hematogenous invasion. There are reasons, bacteriologic and roentgenologic, for believing that the latter is the usual process. What I wish to stress is that these metastatic or "silent" foci represent attenuations of the original infection and that they present opportunities for conservative operative procedures—drill drainage of chronic bone abscesses, simple sequestrectomy, simple drainage of subperiosteal abscesses, etc.—a surgical attitude that Walton Martin[3] of New York has also adopted.

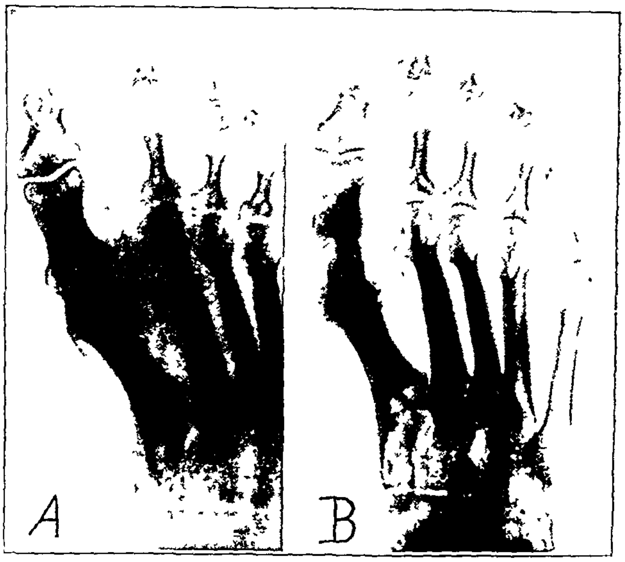

Fig. 2 (Case 2) —*A*, chronic osteomyelitis of first metatarsal bone and first phalanx with late abscess formation; osteophytes on the first metatarsal may be noted *B*, the base of the phalanx has escaped as a sequestrum, and the drainage wound has promptly closed.

Case 1.—P. B., a boy, aged 15 years, was referred to me in October, 1923. A year before he had had acute osteomyelitis of the left femur and abscesses of the right forearm and left axilla; all had been operated on. He was anemic, looked ill and had a temperature of 101. There was bony ankylosis of the left hip and fibrous ankylosis of the left knee. The thigh, much scarred, bore two sinuses in its lower third, discharging pus and leading to the femur; there was a discharging sinus above the trochanter. At operation, at the Broad Street Hospital, I injected these tracts with methylene blue solution and laid them open. Freely dividing the muscles of the gluteofemoral region, I found that the upper tract led toward the ilium, then down to a large cavity behind the head and neck of the femur, in which lay two small sequestrums.

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* Read before the Section on Orthopedic Surgery at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] Brickner, W. M.: Pelvic Actinomycosis: A Study of Five Consecutive Cases Successfully Treated by Operation, Ann. Surg. **81**: 343 (Jan.) 1925.

[2] Phemister, D. B: Silent Foci of Latent Osteomyelitis, J. A. M. A. **82**: 1311 (April 26) 1924

[3] Martin, Walton: The Results of Staphylococcus Infection of Bone, S. Clin. N. Am. **3**: 409 (April) 1923.

The sinus on the outer side of the lower thigh led to a large cavity in the lower end of the femur, extending to the articular surface of the knee joint and containing no sequestrum. This cavity was cleaned out of its contained débris and made more shallow by chiseling. The sinus on the inner side of the thigh led to a cavity in the posterior aspect of the femur, containing two sequestrums.

The boy rapidly improved in health after this operation, and the wounds made steady progress to healing. A short sinus, discharging scantily, remained for a long time on the inner aspect of the thigh, leading to solid bone. I felt sure that a small sequestrum would form there and discharge, and this finally happened a year later (November, 1924). Then two small sequestrums escaped from this sinus, and it promptly closed.

Meanwhile — in June, 1924 — a tender, painful swelling appeared on the dorsum of the right foot over the base of the fourth metatarsal. Roentgenograms showed in the base of the fourth metatarsal an inflammatory bone thickening bearing a small cavity. There was no fever. The patient was put under nitrous oxid and an incision was made evacuating an abscess that had broken through the periosteum over the fourth metatarsal. No sequestrum was found. A rubber dam drain was inserted, and the wound was otherwise sutured. The drain was removed in three days. The wound was completely healed in three weeks, and there has been no recurrence of any symptom there.

In November, 1924, an abscess formed in the left buttock. It led down to the hip, but no bare bone was felt. Healing took place promptly after drainage and the escape of a minute sequestrum. There has been no recurrence in that region thus far.

In March, 1925, an abscess appeared over the outer upper aspect of the *right* thigh. The roentgenogram (Fig. 1) showed no involvement of the bone, but it did show an old inflammatory process in the right hip—a joint lesion that had given no symptoms while the boy was under my observation, but which had been noted roentgenographically when he first came to me Indeed, Figure 1 and the roentgenogram of the right hip taken in October, 1923, are identical. Incision proved this to be a periarticular abscess pointing in the thigh. The joint was not open, and no bare bone was felt. Suppuration diminished promptly, and the wound closed rapidly and has remained healed.

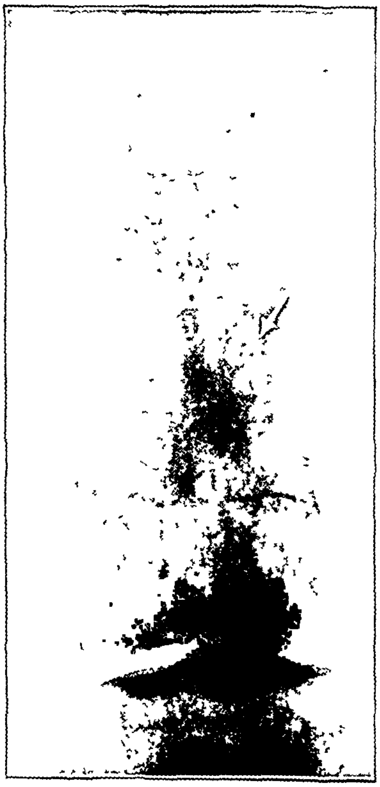

Fig 3 (Case 3) —Chronic osteomyelitis of femur with recurrence of suppuration after ten years Exploratory osteotomy negative Four months later a small sequestrum has formed (below the site of exploration), the removal of which is followed by gradual healing

The products of pyogenic infection of a bone are: suppuration, periostitis, bone destruction and bone production.

New bone production, usually with increased density and thickening, is a reparative, reconstructive process. It requires no treatment, except in efforts to preserve bone length and, sometimes, to correct deformity.

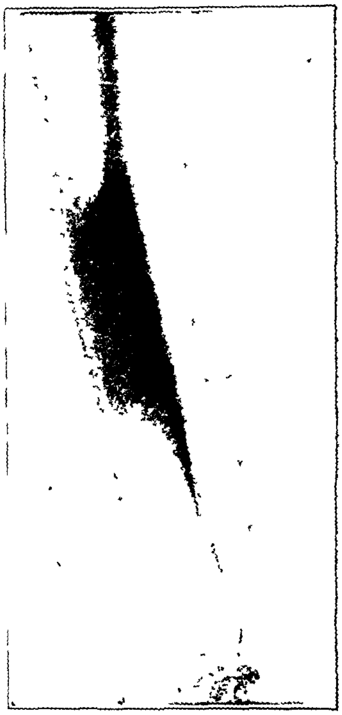

Fig. 4 (Case 4) —Chronic medullary abscess of the tibia, causing pain and soft part swelling, three years after healing of a compound fracture The centripetal growth of compact bone invading the medullary cavity may be noted

Periostitis in itself also rarely demands any surgical attack. It is a part of the inflammatory process, and it subsides with the subsidence of the bone infection.

Bone destruction is the important pathologic process in chronic osteomyelitis—a necrosis that goes on, often over a period of years, to the production of sequestrums of various sizes. This necrosis is associated with, and is the essential cause of, continued suppuration and, often, sinus formation. When these sequestrums are extruded or removed, the sinuses usually close and the suppuration ceases completely, unless some undetached bone is still undergoing necrosis, or until the attenuated infection in the bone initiates a later cycle of necrosis and sequestrum formation. The recognition of this relationship between bone necrosis and suppuration, in *chronic* osteomyelitis, establishes, it seems to me, two important principles in its surgical therapy:

The first of these is that one should wait until a sequestrum has actually formed before operating on the bone. One should provide, if need be, adequate drainage through the soft parts; but if there is no actual sequestrum present, he should delay further procedure until it has developed. In such cases roentgenography at intervals is, of course, very helpful; in most instances the number, size and location of sequestrums are thus revealed. To chisel away more or less necrotic bone before there is a complete sequestration is not a good practice, though a common one; it is an operation in which, in the nature of things, one does too much or too little.

The second principle, also more honored in the breach than in the observance, is to content oneself, for the time being, at any rate, with the removal of the offending sequestrum or sequestrums. Very often, *in spite of overhanging bone*, this may be all that is necessary to effect not only cessation of suppuration but also definitive healing.

Case 2.—B. A., a woman, aged 20, developed an osteomyelitis of the right first metatarsal bone, from a penetrating wound of the foot in 1923. After repeated operations there was healing of the wounds for a time. In November, 1924, there appeared an abscess pointing dorsally in the web space between the first and second toes. The roentgenogram (Fig. 2 *A*) showed no cavity or sequestrum, and none was found at operation, so I merely drained this abscess. A few weeks later the base of the first phalanx necrosed and was lifted out as a large sequestrum. Suppuration ceased promptly and the wound healed, an ankylosis of metatarsal and phalanx developing (Fig. 2 *B*). There has been no recurrence of suppuration.

Case 3.—Mrs. R. B. developed osteomyelitis of the right femur in 1910, and was operated on then, and, by me, again in 1914. There was considerable scarring and deformity, and ankylosis of the knee, but no fresh suppuration until August, 1924. Then pain, swelling and redness developed over the lower third of the thigh anteriorly, with slight fever. I drained a large pus pocket, and performed an exploratory osteotomy, but I found no focus in the femur. Suppuration and sinuses persisted until December, 1924, when roentgenograms (Fig. 3) showed the presence of a small sequestrum. This, lying postero-internally, and below the site of the exploratory osteotomy, I removed by an operation. There followed gradual cessation of suppuration and healing.

Case 4.—W. W., a boy, aged 14, suffered a compound fracture of the right tibia in 1920, and sequestrums were removed three months later, followed by healing with thickening and lengthening of the bone. In October, 1923, he was referred to me because of pain, redness and swelling over an area at the junction of the middle and lower third of the leg. His temperature was normal. There was pronounced localized bone tenderness. Roentgenograms showed that the swelling was in the soft parts and that the medullary cavity was encroached on by centripetal bone growth (Fig. 4) at the level of tenderness, indicating that the chronic abscess was medullary. Under nitrous oxid anesthesia, I made an incision down to the periosteum and drove a three-sixteenth inch drill through the periosteum and into the medullary cavity at the level of maximum tenderness. A small amount of thick, yellow pus escaped. Drill holes above and below evacuated no pus; I had drained the entire abscess. The pus showed in smear a few gram-positive cocci and in culture a nonhemolytic streptococcus. The pain ceased promptly. The three openings remained for an unusually long time as almost dry sinuses, but eventually closed, minute circular sequestrums escaping from two of them.

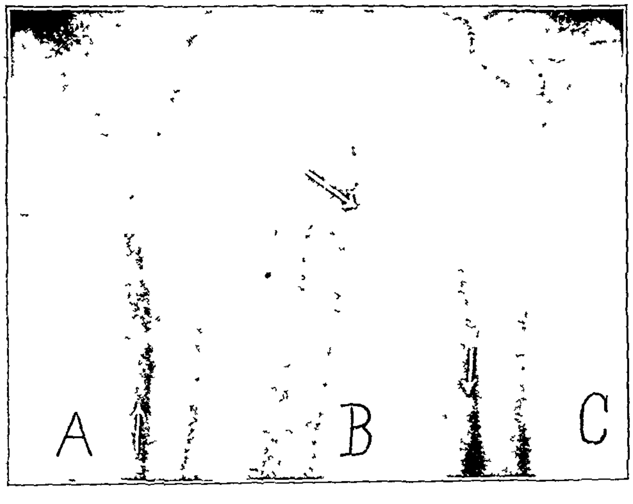

Fig. 5.—Solitary chronic sterile abscess in cortex of femur, with no discovered antecedent infection, in three cases, promptly cured by operation *A*, abscess in postero-internal aspect of femur below lesser trochanter, pain developed a few weeks after a fall on the thigh, and continued for many months, disappearing at once after osteotomy.

Three months after this operation there developed a subcutaneous abscess in the upper part of the leg. This was merely incised, for roentgen-ray examination showed no loose bone. A small sequestrum formed and escaped a little later, and the small wound then promptly closed.

A few months later a sinus appeared in the midleg and a subcutaneous abscess on the outer side of the leg. These required incision and exploration. The sinus led down between tibia and fibula, but no bare bone was found. The larger abscess was also wholly in soft parts. Free drainage was established, but the bone was not touched; and I was rewarded in my judgment against any osteotomy by the gradual and definitive closure of these wounds also. The leg has thus far remained healed and free from pain.

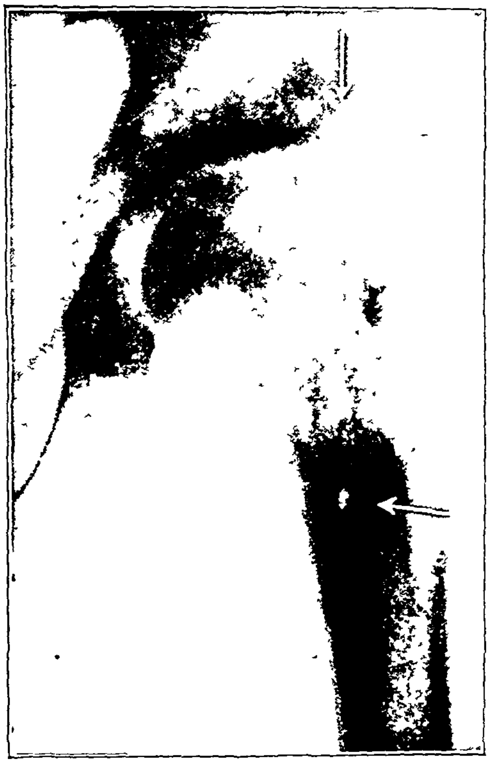

Fig. 6.—Chronic sterile area of bone softening and granulations, surrounded by dense bone, in the intertrochanteric line, giving pain two years after a trauma (fracture of the margin of the acetabulum).

I quite appreciate, and I too have often yielded to, the temptation to perform an extensive osteotomy in these cases of chronic osteomyelitis with sinuses, suppuration and one or more sequestrums. One hopes by chiseling and scraping away to a solid column of so-called healthy bone to eradicate the disease process at once and to effect a prompt and permanent wound closure. How often such hopes are disappointed! Every chisel stroke, every scrape of the curet is an invitation to fresh sequestrum formation; and the extensive osteotomy often serves to delay rather than to hasten the cure.

I quite appreciate, too, the importance of the shallow bone trough to afford an opportunity for contacting with the overlying soft parts. This is an accepted mechanical principle, which has, however, been made a fetish. Too often, I think, surgeons insist on at once removing, often extensively, ledges of healthy bone in cases of chronic osteomyelitis, when a simple sequestrectomy might serve as a primary operation. I believe it is better to delay the plastic osteotomy until its necessity and its extent are more definitely determined and until the field is more nearly aseptic. To effect cessation of suppuration, the removal of the dead bone is much more important than the removal of overlying healthy bone. In spite of preconceived notions, it is by no means always necessary to remove bone over the length of a suppurative process (to which I shall advert again), and probably all surgeons have sometimes seen bone cavities heal over, after sequestrectomy, without removal of their sides, and have even occasionally observed the phenomenon of a large bone defect healing by granulations.

Sometimes a bone cavity is so deep and so situated, e. g., in the head of the tibia, that its eradication by osteotomy is not to be considered. In such a case, sterilization of the cavity by Carrel-Dakin treatment and implantation of an autogenous fat graft may effect closure. For an indolent cavity surrounded by a wall of dense bone, I would suggest a trial of multiple drill holes through that thickened wall, made from within the cavity.

Because it has an important bearing on my subject, I do not think I am much digressing from it to emphasize that what I have said concerning undue attack on healthy bone in chronic osteomyelitis applies also, and even more forcibly, in acute osteomyelitis. As an intern I was taught, and for several years I continued, to chisel away the cortex and cancellus over the full extent of the medullary suppuration (often the entire length of the diaphysis) and then vigorously to scrape out the medullary cavity, thus taking away its surrounding cancellous bone. I am sure that the latter step, especially, is a very bad practice. The marrow pus can be adequately removed by far gentler means. The cancellus is important for bone regeneration and should be preserved as far as possible. As T. Wingate Todd[4] of Cleveland has said, "Cancellous tissue must be conservatively dealt with and under no circumstances removed entirely. It is the bone abscesses which are 'thoroughly' curetted out so that only the compact shell remains which result most disastrously from the point of view of healing. Especially is this the case in those instances in which pure carbolic swabbing is used to finish the destructive work of the curette." John Fraser[5] of Edinburgh also protests against the common practice of scraping out the bone in acute osteomyelitis.[6]

I have, indeed, been getting away from free osteotomy in acute osteomyelitis. I believe that one can accomplish his purpose equally by making drill holes of sufficient size and number, through which the medullaris can be drained. That intervening corticalis may necrose is not important; extensive necrosis may also occur after the free osteotomy. In a case of fulminating osteomyelitis of the humerus and staphylococcemia in a little girl, I made a drill hole at the upper and one at the lower end of the diaphysis, and removed the suppurating medulla by means of a strip of gauze passed on a probe from one opening to the other. The child made an excellent recovery. A sequestrum formed at each drill site, and when these were removed definitive healing took place. As compared with osteotomy the full length of the humerus, this child was spared prolonged hospitalization, extensive scarring and, probably, deformity. I confess that—especially when the periosteum has been stripped up by pus—I sometimes yield to the temptation to remove as much of the presenting bone substance as is suppurating. I think, however, that this is not necessary if drainage is provided by multiple trephination; the bone that will not survive will exfoliate spontaneously.

While subperiosteal abscess is fairly common in acute osteomyelitis, a chronic subperiosteal abscess is only occasionally encountered. The variety produced by the typhoid bacillus communicates typically through a cloaca in the bone with an abscess in the osseous substance.

Chronic collections of pus *within* the bone (bone abscesses) have interested me greatly for several years. The discrete abscess in the cancellous tissue has been long known as Brodie's abscess. Until rather recent years it was commonly supposed to be tuberculous and to occur only in the cancellus and in or near the epiphysis ("epiphyseal abscess," Cruveilhier). In fact, however, such a chronic abscess may occur at any level in the length of bone, in the compact as well as in the cancellous substance, and it is very rarely tuberculous.

In 1917, I called attention to chronic abscesses in the medulla of the long bones[7] as a condition but little recognized, for I found exceedingly few references to it in a search of the literature in English, German and French, including the standard works on general and surgical pathology and on surgery. I quoted Sir Anthony Bowlby as saying in his Surgical Pathology, "Chronic abscess is never met in the shafts, but always in the cancellous tissue of the epiphyseal ends," an erroneous statement which he repeated in his 1921 edition.

As contrasted with abscesses elsewhere in the bone, a chronic accumulation of pus in the medullary canal, like acute suppuration therein, often does not show, as such, in the roentgenogram. The appearance is then merely that of the associated osteoperiostitis. There is, however, this suggestion for a diagnosis in the film: there may be very little external thickening of the bone, and the osteitis spreads [illegible] encroaching on and sometimes, in one or more places, obliterating the medullary cavity (Fig. 4). This internal thickening is by dense, dry bone, and such an osteitis or osteoperiostitis (when, by its appearance or otherwise, syphilis can be excluded, and when there is no evident necrosis or cortical abscess) indicates the possibility of a medullary abscess. If the medullary cavity is invaded by osseous growth in such a manner as to surround an "island" of pus, such a central abscess will appear in the film as a dark area, unless, indeed, the surrounding bone is so thick and so dense as to obscure the picture of the cavity within. Abscesses within the cancellous substance of the bone show clearly, of course, in the roentgenogram. The bone surrounding the abscess is usually of greatly increased density, but sometimes the cavity is in bone of normal or nearly normal density.

Chronic bone abscesses, central or cortical, are often, if not usually, residual from an osteomyelitis active even twenty or more years before the abscess makes its presence known. In Figure 5, however, are roentgenograms of three consecutive cases of solitary, chronic, sterile, cortical abscess of the femur in young women, which I operated on within the past year in my service at the

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[4] Todd, T. W.: The Role of Cancellous Tissue in Healing Bone, Ann. Surg. **72**: 452 (Oct.) 1920.

[5] Fraser, John: Discussion on Acute Osteomyelitis, Brit. M. J. **2**: 605 (Oct.) 1924.

[6] In passing, it is of interest to note that Fraser expresses the opinion that the cases of acute osteomyelitis in children that subside spontaneously are almost invariably instances of pneumococcus infection.

[7] Brickner, W. M.: [illegible] Abscess of the Long Bones: Its Clinical and [illegible] Its Treatment by Simple Trephining, Ann. [illegible] 7.

Hospital for Joint Diseases, and in none of which was there any antecedent osteomyelitis or other discovered or remembered infection. In the case illustrated in Figure 5 *A*, the pain began a few weeks after a fall on the outer side of the thigh. Figure 6 is the roentgenogram of the hip of a boy with the roentgen-ray and clinical signs of a pea-sized bone abscess in the intertrochanteric region, of one year's duration, developing two years after a trauma (fracture of the margin of the acetabulum); a small area of softened tissue was found, surrounded by dense bone, but there was no pus. This softened area in the femur showed, microscopically, atrophic bone trabeculae, osteoclasts, granulation tissue and much thickened blood vessels—a circumscribed nonsuppurative osteomyelitis.

It is difficult to decide, sometimes, whether a small chronic abscess is cortical or subperiosteal in origin. Whether only a drop or two of pus in the cortex or several drams in the medullary canal, chronic bone abscesses have a uniform symptomatology: persistent pain (often radiating and mistreated for "neuritis" and "rheumatism") and distinct localized bone tenderness. The condition is usually afebrile but sometimes subfebrile (100, even 101). As I pointed out in the article to which I referred, and in two later publications,[8] chronic bone abscesses tend to become sterile, that is to say, the organisms in the pus (usually staphylococci) are dead or much attenuated. The recognition of this phenomenon led me to devise the treatment of these nonperforating abscesses, large or small, that I have elsewhere described; namely, by simple evacuation through a small drill hole:

> With the patient under nitrous oxid narcosis, an incision about 2 inches long is made through the skin and (except, for example, over the inner surface of the tibia) the underlying muscle is split, or retracted, to expose the periosteum. Through this and into the bone, at a point determined by roentgenogram or by the level of maximum tenderness, a drill from one-eighth inch to one-fourth inch in diameter is driven deeply enough to permit the escape of pus. If, perchance, the situation of a small abscess has not been estimated accurately enough for it to be thus tapped by the first opening, other drill holes can be made with little damage to the bone, or the surgeon may defer the completion of the operation to determine roentgenographically the relative levels of the abscess and his first drill hole. With the escape of pus the drill is removed and nothing else is introduced into the bone—no probe, curet, or gauze packing. A culture is made from the pus to determine what, if any, living organism it contains. A smear is also stained and examined at once. (Often the smear shows a few staphylococci and the culture remains sterile.) A small drain of folded rubber dam is laid in the soft parts down to, but not into, the opening in the bone, and the wound is otherwise closed by sutures. A simple gauze dressing completes the operation. The patient is immediately relieved of his pain. The drain is to provide for any further escape of pus from the bone, and to act as a safety valve in case of possible suppuration in the bone cavity or the soft parts, caused by dormant organisms awakened to activity. It is removed, usually without replacement, in three or four days; i. e., as soon as discharge has practically ceased. The small opening in the soft parts is then allowed to close and, ordinarily, healing of the entire wound is complete in ten days or less, few of which, usually, are spent in bed. Contrast this with the prolonged disability and invalidism, not to speak of the scarring and deformity, of wide-open osteotomy and slow "healing from the bottom," with its inherent risks of sequestrum formation and secondary operations!

Occasionally a small ringlike sequestrum forms at the drill site and final healing is delayed until this escapes. The soft parts are healed before the opening into the bone; and, in turn, the drill hole fills with bone long before the abscess cavity does. Indeed, as I have pointed out, roentgenograms will often show this cavity in the bone persisting months and years, filled, probably, with granulation or fibrous tissue.

Writing a few years later on the treatment of bone cavities, Walton Martin[9] also observed that cavities may fill with fibrous tissue and heal over while the bone defect is seen in roentgenograms to persist. Of Brodie's abscess, he said that if one of the walls of the cavity is cut away so that there is no overhanging roof, the soft parts can be brought together and the skin sutured, as recommended by Watson Cheyne twenty-five years ago or more, for "the micro-organisms have not sufficient virulence to infect the blood clot." Martin believes that this is the most satisfactory method for *small, chronic, localized abscesses surrounded by eburnated bone.* It is, however, much more of an operation than the equally curative procedure of simply drilling into the abscess under nitrous oxid; and it would be a rather mutilating operation if applied to unroofing an extensive collection of pus in the medulla. Bevan[10] of Chicago and McWilliams[11] of New York each also recorded the treatment of chronic bone abscesses by freely removing overlying bone, applying chemical antiseptics and then closing the soft parts over, Bevan by primary and McWilliams by delayed suture. The abscesses being sterile or nearly so, such osteotomies are unnecessary, as the results of my simpler method have shown. In all my cases, it has thus far proved entirely successful, including those in which the pus was not sterile, in three of which the overlying skin was somewhat red and the patient had had a slight daily rise of temperature. I am prepared to believe, however, that healing may not always thus promptly take place. It is conceivable that, as the result of introducing a secondary infection or of the awakening into activity of dormant organisms, suppuration may continue and require further operation. Even accepting such a possibility, there is much to be gained and little to be lost by a trial of the simple minor operation of merely draining the chronic bone abscess through a small drill hole.

SUMMARY

The phenomenon of attenuation and longevity of pyogenic bacteria in the bones is exquisitely illustrated in the chronic bone abscess, and is to be observed in other latent local and metastatic foci of osteomyelitis. In these conditions, especially, it affords opportunities for conservative surgery—drill drainage of nonperforating chronic bone abscesses, incision of subperiosteal abscesses, simple sequestrectomy.

The important pathologic process in chronic osteomyelitis is bone necrosis. There is a definite causal relationship between this necrosis and suppuration. When necrosed bone escapes or is removed, the suppuration usually ceases.

Two important principles apply in the surgery of chronic osteomyelitis: First, the bone itself should not be attacked until a sequestrum has definitely formed.

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[8] Brickner, W. M.: Chronic Bone Abscess: Its Treatment by Simple Evacuation Through a Drill Hole, Surg., Gynec. & Obst. **35**: 84 (July) 1922. The Treatment of Chronic Bone Abscesses by Simple Evacuation Through a Small Drill Hole: Its Application in Nonsterile Abscesses, J. Bone & Joint Surg. **5**: 492 (July) 1923.

[9] Martin, Walton: The Treatment of Bone Cavities, Ann. Surg. **71**: 47 (Jan.) 1920.

[10] Bevan, A. D.: Brodie Abscess, S. Clinics, Chicago **3**: 737 (June) 1919.

[11] McWilliams, C. A.: Central Bone Abscess: Brodie's Abscess: Chronic Suppurative Osteomyelitis, Ann. Surg. **74**: 568 (Nov.) 1921.

Second, the simple removal of sequestrums may be all that is necessary to effect healing, in spite of overhanging healthy bone. As a rule, simple sequestrectomy should serve as a primary operation. The shallow bone trough may be required to effect definitive healing, but plastic osteotomy may be wisely deferred until its necessity and extent are definitely indicated.

Osteotomy cannot be applied in all situations to eradicate bone cavities, which, however, sometimes close up or close over spontaneously. For an indolent cavity, surrounded by a wall of dense bone, the drilling of small holes through that wall is suggested.

In acute osteomyelitis, extensive gutter osteotomy is not necessary, and scraping out the cancellous bone is to be severely condemned. Drainage can be provided through drill holes (trephinage) of sufficient size and number, or through bipolar trephinage; and suppurating medullaris may be adequately evacuated with gauze wipes or irrigation, or may be left to drain out.

Chronic bone abscesses may be medullary or cortical, may be at any level of the bone, and are rarely tuberculous. Their symptoms are pain and bone tenderness, occasionally slight fever. Chronic bone abscesses are usually residual from, and give symptoms years after, acute osteomyelitis. There is illustrated, however, a series of solitary, chronic, sterile, cortical abscesses without any discovered antecedent infection. Nonperforating chronic bone abscesses are usually sterile or nearly so. Osteotomy is therefore not necessary for their cure. My method of treatment by simple evacuation through a small drill hole has been uniformly successful, in my experience, even in nonsterile cases.

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ABSTRACT OF DISCUSSION

DR. W. G. STERN, Cleveland: Attenuated metastatic bone abscesses are, I believe, a common experience with all of us in these days when osteomyelitis seems to be so much more prevalent (at least it is in the Central West) than it was five or ten years ago. With the amendment of using small trephine holes instead of drill holes, and with the amendment of using heliotherapy in the after-treatment, just as it is used in tuberculosis of the bones and joints, I agree with all that is said in the paper of Dr. Brickner. I have in the hospital at present a boy with his twenty-first metastatic bone abscess in the course of five years, and with the exception of one of these metastases, he was successfully treated in the way described by Dr. Brickner.

DR. F. R. OBER, Boston: Metastatic infection may give rise to infection in joints without symptoms. I have seen dislocations of the hip occur with a large abscess and attenuated organisms, without symptoms. It is not uncommon. The real problem in osteomyelitis is in the low grade chronic type with diffuse infections of the whole bone, many perhaps showing no bacterial growth on culture. The question is: Would one do the conservative operation on this, or would one resect the bone? If such a bone is opened and Carrel-Dakin treatment used, one will not get any better result than if the bone is opened and ordinary surgical drainage used. The Carrel-Dakin treatment will not reach all the parts of a shaft of a bone which contains diffuse infection, and I have had considerable experience with this method. I think that if one treats a case of diffuse osteomyelitis of a weight-bearing bone by treating it until the sinus discharges very little, and then let the patient get up and walk, reinfection or an extension of the infection of the bone over a long period of time will result; but if in a few cases of this so-called diffuse osteomyelitis the patients are put on Thomas splints, with a high sole on the other foot, and allowed to walk, one will be surprised in six months or a year to see how rapidly bone trabeculation approaches the normal and how rapidly the small sequestrums which could not be seen before become localized.

DR. J. W. SEVER, Boston: A number of years ago I reported a large number of cases of osteomyelitis, particularly some in which resections had been done, and in which regeneration had failed. At that time they were disappointments to me because I had been following Dr. Nichols' teaching, and I had expected better results. We do not do that any more, unless we want permanently crippled legs. The conservative, careful surgery that Dr. Brickner advocates is, I believe, the only thing to do in any type of osteomyelitis, acute or chronic. It is the only way that one will get satisfactory results, and it is the only thing surgically that really offers anything at all.

DR. FENWICK BEEKMAN, New York: I wish also to impress the necessity of conservatism in the operative treatment of osteomyelitis. We have seen at Bellevue a great many cases in which resection of the bones was done in other hospitals, and in the majority of them, regeneration had not taken place. We have now a child who has been in our wards for two and a half years who had a resection of the tibia. At present he has two stalactites, whose points are at least an inch apart. In the operative treatment of this condition, the pathology of the disease must be considered. First of all, there is the destructive period, when the infection is progressive. The destruction in this period is due to the toxins of the organism, and to the interference of circulation, this interference of circulation being due to thrombosis, the increased intramedullary pressure and to the stripping of the periosteum. The indications for treatment at this time are, first, to save life, and, secondly, to give a functional limb. To save life and to prevent the destruction of the bone, the pressure within the medullary cavity must be relieved, and this relief of pressure must be carried out with as little injury to the circulation as possible. I feel, therefore, that at this period an operation as simple as possible should be performed, and that is an incision in the soft parts with trephining of the bone to obtain free drainage. While the constructive period is progressing, it is at times necessary to drain either the soft parts or the bone to relieve abscesses that have formed. No attempt should be made to remove the sequestrum until it has fully formed, and then this should be done with as little injury to the soft parts (periosteum and bone) as possible. The best technic is usually to place the tourniquet on the limb, to cut down on one of the sinuses, to enlarge the opening of the cloaca and to tease out the fully formed sequestrum. When the sequestrum has been removed, the sinuses will usually heal rapidly. The difference between débridement of soft tissues and of bone is that the circulation of the soft tissue is in a direction of from within out, while the direction of the circulation to the bone is from without in; therefore, any radical operation on the cortex of a bone is going to destroy large blood vessels rather than the terminal ones.

DR. J. A. DICKSON, Cleveland: One point in connection with the treatment of chronic osteomyelitis that has not been mentioned is the use of the muscle flap. In a series of 100 cases in which operation was done by Dr. Dunn of Birmingham, radical sequestrectomy was done; the cavity was completely saucerized and either the muscle was rolled in to fill the cavity, or in the cases in which the cavity went right through the bone, a long pedicle muscle strip was used to fill the cavity. In that series of 100 cases, although in some of them anywhere from four to sixteen operations had been done, in 80 per cent. healing took place within five weeks. In the other 20 per cent. there were continuous sinuses or secondary sequestrums formed. With regard to acute osteomyelitis or localized abscesses, the ideal treatment has been outlined by Dr. Brickner; that is, just simple drainage in the large majority of cases will lead to excellent results. In other cases in which that does not happen, radical sequestrectomy with a muscle flap is very satisfactory.

DR. S. L. MCCURDY, Pittsburgh: It is to be hoped that all have read Macewen's work on bone growth and regeneration, in which he plainly states that bone growth cannot occur except in the presence of osteogenic cells; that like begets like, and nerve tissue cannot regenerate bone any more than a muscle can regenerate a nerve. It has been demonstrated in my own practice in a number of cases that when a sequestrum was removed before beginning regeneration, there was no hope for new growth. In cases of osteomyelitis involving the entire length of the bone, the soft parts should be split open throughout the diseased area and dressed with salt solution until regeneration has occurred, which is usually in about two months. The sequestrum should be removed; the involucrum still attached to the soft parts should be cracked along the two sides and forced down into the cavity thus left. No packing should be used. In such cases bone regeneration occurs, the new bone usually being larger than the bone on the opposite side. Packing destroys blood clot organization, the essential to bone regeneration.

Dr. W. M. Brickner, New York: I am glad that the methods I have attempted to crystallize here have been commended, and especially glad to hear from Dr. Stern that he has had such excellent results with my method of treating chronic bone abscesses. I shall not quarrel because he uses the trephine rather than the small drill; it is not a matter of great importance. With the chronic, presumed-to-be sterile abscess a small drill is all that is necessary to evacuate the pus; a trephine leaves a larger opening which takes that much longer to close. In acute osteomyelitis I use the trephine because I want a larger hole. I agree with Dr. Ober that the Carrel-Dakin treatment will not sterilize a diffuse osteomyelitis under any circumstances. It is helpful, however, in a discrete cavity or at least one that is surrounded with dense bone. It was not my purpose to decry plastic procedures as a means of curing persistent osteomyelitis with multiple sinus formation and necrosis. What I wanted to emphasize is that these plastic and other radical operations should not be undertaken at once. Many surgeons, orthopedic and general, do what I have objected to; namely, as soon as a chronic osteomyelitis manifests itself by the formation of a sinus, they assume that they must perform a radical operation, a saucerization, without waiting for a sequestrum to form. I say that one should wait until the sequestrum has fully formed and is loose; then remove the sequestrum, and in many cases one will not have to do anything further. But if, in the course of time, in spite of sequestrectomy, a more radical operation is needed, I certainly do not object to it; and among these operations, that spoken of, as developed by Chutro and others, of infolding of muscle, is certainly among the best. It was not that aspect of the treatment of osteomyelitis, however, that I essayed to discuss. The very radical operation of subperiosteal resection should be a last resort. It is far more serious for the patient to have an unregenerated bone, a flail extremity, than to continue through life with discharging sinuses, even if that were the alternative, which it is not. And a shortening of 3 inches is also a tragedy There is one condition in which one may advisedly perform a primary subperiosteal resection—the rather rarely met acute osteomyelitis of the fibula.

I-Em-Hetep, Egyptian Deity of Medicine.—Hitherto medicine has recognized as its patronal deity the somewhat legendary Aesculapius, who is supposed to have lived at the time of the siege of Troy, but of whom no biographical details are extant. The new badge of the Reading Pathological Society represents the far more venerable Egyptian diety of medicine, I-em-hetep or Imhotep, whose name signifies "he who cometh in peace." This famous Egyptian lived about 2,900 years B. C., and was a learned, manysided man, who filled, amongst other offices, that of vizier to Pharaoh of the third dynasty named Zoser. Further, he was a noted architect, and built the earliest pyramid known to history, the Step Pyramid of Sakkarah, near Cairo. Above all, however, he was distinguished as a physician, and so impressed his fellow countrymen with his skill in the ars medendi that he was eventually acknowledged and worshipped throughout Egypt as the deity of medicine. In his honor temples were erected in various parts of the country, and to them flocked patients from far and near. Many miraculous cures are reputed to have taken place at his shrines.—*Brit. M. J.* 2:788 (Oct. 17) 1925.

EXPLOSIONS OF ANESTHETIC GASES

A METHOD FOR THE CONTROL OF ELECTROSTATIC CONDITIONS

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Shortly after the introduction of ethylene-oxygen for anesthesia in the Presbyterian Hospital, March 14, 1923, two minor explosions occurred in the delivery room. The first one took place when the breathing tube and cone were placed on the head of the machine; the other one occurred while the anesthetist was holding the cone preparatory to its application to the patient's face. In the first instance, a spark was produced when the metal on the tube came in contact with the metal on the head of the machine. In the second case, the anesthetist thought it probable that he had struck the metal table with the cone, causing a spark. No further trouble was experienced for nearly a year, when two explosions occurred within two hours in different operating rooms. The first of these two explosions occurred when an assistant's gown brushed against the breathing tube in passing, and the other took place when the tube was being changed from one machine to another. The fifth ethylene-oxygen explosion, similar to the fourth, occurred when the breathing tube was being attached to another machine. No damage was done to any one.

Becoming exercised over these explosions, we substituted nitrous oxid-oxygen for ethylene-oxygen. Within a few weeks two explosions occurred with this gas. The first of these took place when the patient and gas machine were being wheeled into the operating room during anesthesia. The anesthetist (an intern) was unable to give any definite information regarding the cause, but thought that the cone had been kept on the face during the trip into the operating room. The second explosion during the administration of nitrous oxid-oxygen occurred at the completion of an administration, when the breathing tube was being disconnected from the machine.

The gases were flowing at the time of all the explosions. With the exception of the first two explosions, there was ether in the ether chamber of the gas machine; and in one of the nitrous oxid-oxygen explosions, and two of the ethylene-oxygen explosions, it became ignited and damaged the head of the machine. Following the explosions, the gases were immediately turned off at the tanks. However, the flame exhibited no tendency to pass up the tubes connecting the tanks and the machine. This proved that neither ethylene unmixed with oxygen nor nitrous oxid unmixed with oxygen and ether forms explosive mixtures. The burning ether was put out with a fire extinguisher, which is kept in the hall adjacent to the operating room.

In each explosion the breathing tube was broken in one or more places. Fortunately, with the exception of some discoloration about the eyes of one of the patients to whom nitrous oxid-oxygen was being administered, no patient was injured nor was any anesthetist or person in the room harmed.

It is interesting to note that when the machine contained no ether, the ethylene-oxygen burned with a small blue flame at the point of exit from the machine;

which was easily extinguished by blowing it out with the breath. All of the explosions occurred during cold, dry weather when the humidity in the operating room was low.

On account of the great value of ethylene as an anesthetic agent, we were loath to abandon its use. After several months of vain effort on our part to control static spark in the operating rooms, we were much delighted when the testing department of the Commonwealth Edison Company consented to attempt to work out the problem. The result of their studies follows:

From the descriptions of the explosions that occurred in the Presbyterian Hospital and similar occurrences elsewhere, it seems fairly conclusive that they were caused by electrostatic sparks in the presence of an explosive mixture. An article[1] has been published, giving the explosibility of ether, ethylene, nitrous oxid and oxygen under various conditions. The fact that an explosive mixture may result under certain conditions is generally accepted. In order to understand the method used to prevent electrostatic sparks, some of the general conditions of the hospital will be explained. Many of the hall floors are covered with linoleum. In May, 1925, when not much heat was required from the steam heating system, it was found that if a nurse touched a grounded water pipe and walked down the hall, on returning to the water pipe she was electrically charged with respect to the water pipe.

This showed that walking along the floor developed an electrostatic charge. Some of the hospital carts have around the upper part a heavy rubber designed to take the jar in case of collision. It was found that this rubber and some of the iron in carts standing around on the floor were charged. A section of the rubber could be discharged by touching it with the hand while the other hand was on the water pipe, but a section of the rubber an inch or two away still remained charged.

The indications were all obtained with an electroscope. It was thought in the beginning that a laboratory type of sensitive electroscope would be required to obtain indications of charge, but such was not the case, as strong indications were obtained with an ordinary pocket type. These indications obtained on the nurse and wagon brought out the fact that whatever charge might exist in the operating rooms, it is possible and even probable that some charges are brought in from the outside.

The large operating room in which several of the explosions occurred has a floor of white tile set in concrete. Generally, sterilizing in the adjacent room is done before or after operating hours. During operations, while steam heat is used in the building, the relative humidity in the operating room has been about 31 per cent. While sterilizing is in process, the humidity is higher.

In this room with relative humidity of from 30 to 40 per cent., at times if a person touched the grounded water pipe, walked across the tile floor and returned to the water pipe, he became charged with respect to the pipe.

This showed that at times the tile floor acted as a fair insulator; otherwise the charge would neutralize through the floor to the water pipe. This is not surprising if we remember that tile is somewhat similar to porcelain, one of the best electrical insulators. These tiles are set in concrete which, so far as is known, contains no general embedded, grounded reinforcing mesh. Tests made in another hospital showed that charges could be similarly developed in the operating room.

If the humidity could be kept high enough in the operating rooms, it might be difficult to develop electrostatic charges, and any charges brought in from outside would leak off. The drawbacks to a high humidity plan are, first, that the humidifying system would need constant watching and a drop in the humidity might pass unnoticed and prove disastrous; and, second, that a high humidity at the temperature maintained in the operating room would render working conditions very uncomfortable. In considering the prevention of explosions, it was felt that a system was desirable which would not require constant supervision and which, at the same time, would cause no discomfort to those concerned.

The next plan considered and the one finally chosen was that of having all objects on which a charge might exist connected together by a metallic connection and held at a standard potential, such as ground. (The hospital uses a gas machine equipped with two rubber gas bags and a heavy rubber breathing tube with a rubber face cone.)

In making tests, the gas machine was charged in the operating room by operating an electrostatic machine close to it. On one occasion, after the machine was charged, the breathing tube was removed and placed on a marble-topped table equipped with iron legs, which rested on the tile floor. A half hour later, when this tube was tested, the electroscope indicated a strong charge.

Further tests showed that the cone, breathing tube and rubber gas bags would retain charges for a considerable time, and also that, although one section of the rubber might be discharged, another remained charged.

These points, in connection with the fact that four of the seven explosions occurred when the tube came in contact with some object, indicated that a considerable charge had existed on the tube, and that some steps should be taken to discharge the tube and all rubber parts of the machine. This was accomplished by placing brass chains in the netting covering the bags and a spiral wire around the tube. These made metallic contact with the other parts of the machine. The inner surface of the breathing tube has a spiral wire partly embedded in it. Tests using low voltage showed that almost every point of the inner surface had a metallic contact with the metal connections on the end. However, this inner spiral wire did not prevent the accumulation of a charge on the outside of the tube. A published article[2] stated that in a certain hospital effectual grounding has been obtained through damp towels, placed on a tile floor, touching the metallic parts of the machine. Tests in this case, however, showed that even with wet towels a considerable charge could be maintained on the gas machine with a nearby static machine. Because of this point and of the fact that charges might be brought in from outside as well as developed by walking across the floor of the operating room, the conclusion was reached that a positive grounding system was needed, one which would always give a dependable ground, which would ground any person or apparatus brought up to the operating table or gas machine, and which would not require constant watchful supervision.

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[1] Brown, W. E.: Explosibility of Ethylene Mixtures, J. A. M. A. 82: 1039 (March 29) 1924

[2] Lewis, W. B., and Boehm, E. F.: Simple Method of Eliminating Danger of Explosion Due to Static Spark in Gas-Oxygen Apparatus, J. A. M. A. 84: 1417 (May 9) 1925.

It was decided that the best plan at the time would be the installation on the floor of a sheet of steel large enough to accommodate surgeons, anesthetist, nurses, operating table and gas machine. The sheet was installed and is of such size that any person approaching the gas machine or operating table will first be grounded by stepping on the outer margin of the metal plate. Later, the following floor plan was devised and is being installed: The floors and base are to be what is commonly known as cloisonné terrazzo, similar to the kind of floors used in some of the large rooms in modern hotels. Briefly, it consists of small squares of terrazzo separated by narrow brass strips. For our purposes these strips are placed 5 inches on centers each way, and are slotted together at the intersections. After the terrazzo material has hardened, the entire surface is ground down to a smooth finish, which brings the edges of the strips flush with the floor. The general appearance is that of a tile floor except that the joints are brass instead of cement. This grille of brass strips is electrically connected together and then grounded to the water pipes. Each piece of movable equipment, such as tables, stands and anesthetizing machines is equipped on the under side with several small link brass chains which are long enough to drag on the floor for several inches. Regardless of he position of the equipment on the floor, at least one of ese chains will be in contact with a brass strip; thus are grounded and a difference in potential is imposble. The smallness of the squares of terrazzo also ounds the operators and assistants as they move about their regular routine of work, which eliminates the possibility of an assistant going to another room or ungrounded equipment and bringing back a charge of different potential.

A summary of the points of the system which was devised to prevent static follows:

1. A grounded metal plate of nonrusting furniture steel large enough to accommodate the operating table, the staff and the gas machine, with an unused margin on all sides is being used while the floor described above is being installed.

2. Chains and wire are used as a covering for the rubber bags and the breathing tube, and are connected to the metal frame of the machine. A metal frame and metal prongs have been installed over the celluloid in the face cone. This metal frame, through the breathing tube or the wire wrapping and embedded wire, is connected by metal to other parts of the machine.

3. Pendent brass chains, two or more in each case, are fastened to the axles of the operating table and the gas machine, to ground them to the metal floor plate.

4. Two strips of metal mesh about 18 inches long and one-half inch wide are connected to the metal of the under side of the operating table. One strip has a small metal plate on the free end, which is placed under the patient to ground him to the table. The other strip is thrown over the shield at the patient's head.

5. A rubber mat on the base of the machine is removed or holes are cut in it so that the gas tanks have a good metallic connection to the base. Gas hose encased in spiral wire is connected to the metal of the machine.

With this system no indication of charge could be obtained on any of the protected apparatus when an electrostatic machine was operated nearby, while without the system, strong indications were obtained, which in some cases remained for a considerable time on rubber parts.

In the new operating rooms now under construction, there is being installed a crosswork system of grounded copper bars, cloisonné, 4 inches apart, the top edges to be even with the top of the terrazzo floor. These bars will take the place of the metal plate.

Experiments also are being carried on to find whether a rubber which is a partial electrical conductor can be used and the chain or wire covering dispensed with.

It has been found that if the breathing tube with the internal wire is wrapped externally with wire having one-eigth inch between turns, this external wire is efficient in dissipating an electrostatic charge. The wire is more desirable than mesh covering because of its lighter weight. Experiments have proved that metallic paints, such as aluminum, cannot be used for this purpose, as they are not electrical conductors.

Experiments seem to confirm the belief that this system of grounding and electrical interconnection will prevent electrostatic sparks.

While it may seem that the matter of connections has been entered into with considerable detail, and that fine points have been followed to the extreme, it was felt that, to be on the side of absolute prevention and protection, a conclusion should be reached on every point that could be foreseen.

The following suggestions of Dr. E. I. McKesson do not conflict with the foregoing precautions and may be employed to advantage in conjunction with them:

1. One should shut off the ether evaporizer valve, turning to the word "Fill," and shut off the mixing valve by placing it at 100 per cent. air at the close of any anesthetic. This prevents the movement or delivery of all gases through the apparatus.

2. The inhaler and breathing tube should be washed out with water at a faucet immediately *before* starting an anesthetic. This is done for three purposes: (*a*) It promotes cleanliness; (*b*) it removes static electricity from the anesthetist who washes it, and (*c*) it removes static and combustible vapors from the mask and tube.

3. The anesthetist should attach the tube to the apparatus and at once apply the mask to the patient's face, bringing the hand into contact with the patient's face, thus neutralizing any static between the patient, the anesthetist or the inhaler. If a spark should be discharged from the patient, no harm is done, since there is still no combustible vapor present.

4. Now the anesthetic is turned on. From this moment the patient, the anesthetist and the apparatus are, of necessity, in almost constant contact throughout the operation, preventing any discharges of sparks.

5. As the operation is completed, the anesthetist should turn off the ether or the ethylene by setting the mixture valve at 100 per cent. air, remove the tube and inhaler from the apparatus, again wash them out with water at the faucet, and hang them up in a vertical position to permit of ventilation until the next anesthetic is to be given.

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THE USE OF ETHER IN PERTUSSIS BY INTRAMUSCULAR AND RECTAL INJECTION *

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The use of ether by intramuscular injection was first suggested by Audrain [1] in 1914. Besides advocating its use in pertussis, he was no less enthusiastic concerning its efficacy in infections, such as scarlet fever, measles and bronchopneumonia. He believed, in the case of pertussis, that it exerted a specific bactericidal effect on the Bordet-Gengou bacillus.

In the last five years, an increasing number of writers have almost unanimously testified to the usefulness of ether in pertussis, their degree of enthusiasm varying from that of Castorina,[2] who feels that the problem of the treatment of whooping cough is now on the road to a definite solution, and that "results obtained with vaccinotherapy and intramuscular injection of ether lead us to hope that we are at last in possession of an efficacious means of combating this serious disease," to the more conservative conclusions of Macciotta,[3] who feels that ether therapy in pertussis exerts only a transitory and variable antispasmodic action which is not constant, and that it is therefore not to be taken as a decisive stroke in the cure of such a severe illness "except that it represents a step forward and a therapeutic measure not to be despised." He feels that it does not justify the exaggerated enthusiasm that some authors have shown, and thinks that in some instances the results from vaccinotherapy are not to be disregarded. Bedo [4] noted an apparent cure in two children with pertussis who had been given a general anesthetic for an operation long before any reports on ether treatment in whooping cough had been published. He observed rapid subsidence of the symptoms, but suggests that on account of the pain of intramuscular injection the procedure be restricted to severe cases and to young infants. Tow [5] concludes that ether injected intramuscularly is a valuable drug in the treatment of pertussis, and reports relief in 82 per cent. of sixty-one cases, in which the number and severity of paroxysms were reduced, sleep and appetite improved and vomiting was lessened.

The technic generally consists of the injection of from 1 to 2 c.c. of ordinary sulphuric ether, usually into the gluteal region either daily or on alternate days, some authors using three injections, others more. The danger of producing necrosis by the use of this method can never be lost sight of; thus Tow,[5] in a series of 385 injections, had eight instances in which necrosis followed.

During the past year, I have used ether by intramuscular injection in eighteen cases of whooping cough. On account of the severe though momentary pain, and the risk of necrosis, I have confined the use of this measure to the most severe cases. The number of injections given was six in one case, five in three cases, four in two cases, three in eleven cases and one in one case. Injections were given on alternate days, the initial dose being 2 c.c. to the older children and 1 c.c. to the infants, increasing to a maximum of 2, 2.5 or 3 c.c. Ether was noted on the breath within a minute or two after the injection and remained quite noticeable for six or eight hours. No necrosis occurred in this series of sixty-three injections, but one child developed swelling and redness at the site of the injection and showed some induration of the buttocks for about three months afterward.

Results in these eighteen cases were generally good. What might be called a cure resulted in three cases; by this I mean that immediate and lasting improvement occurred immediately following the treatment. These three cases, however, were all well advanced in the disease—beyond their sixth week—although they showed no signs of a remission in the severity of their symptoms. The extreme severity of the paroxysms, the vomiting and the sleepless nights were as bad when the patients presented themselves for treatment as they were at the height of the disease. The results in these three cases were dramatic.

Definite improvement occurred in ten children, and slight improvement in two, making a total of fifteen out of eighteen cases, or 83.3 per cent., in which improvement was seen. This corresponds quite closely to Tow's record of 82 per cent. of cases in which improvement was noted. No noticeable result was seen in two cases; the patients were members of the same family, 5 and 7 years old, respectively. Both children were so terrified by the procedure that the fear of the injection and the intense accompanying nervousness nullified any benefit that might have resulted. One infant, aged 2½ weeks, died. This child contracted whooping cough when he was a little under 2 weeks old. No benefit was seen from this treatment.

The cases that showed the greatest benefit were the ones well on in the paroxysmal stage; one was that of a child, 1 year old, in the sixth week of extremely severe whooping cough, who with each paroxysm became cyanotic and lost consciousness. This child was given a single injection of 3 c.c. of ether with instant cessation of the paroxysms and with a change to an ordinary severe cough, with an occasional whoop. Another was an infant, 7 weeks old, in the third week of pertussis; six injections in all were given, beginning with 1 c.c. and increasing to 2 c.c. on alternate days. The whoop disappeared after the second injection. The mother observed a tendency for the cough to become more severe as the effect of the ether wore off and was quite positive concerning the immediate benefit of the ether. Another child, 15 months old, in the fifth week of cough, was weak, emaciated and listless. When seen for the first time she had been unable to retain any food for several days; each paroxysm, and they were very numerous, left her limp and bathed in perspiration; her condition seemed precarious. Four injections of 2 c.c. of ether each on alternate days effected a startling change in the child, the vomiting ceased, the appetite returned and the number and severity of the paroxysms were greatly diminished. An older child, aged 5 years, in the fourth week, had paroxysms of the greatest severity at about half-hourly intervals during the day; the nights were indescribably bad; vomiting occurred whenever food was taken. After the first injection no benefit was seen, but after the second both the paroxysms and the vomiting suddenly stopped and did not return. The child coughed for about thr

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* Read at the Third Annual Meeting of the Canadian Society for the Study of Diseases of Children, Ottawa, June 5, 1925

[1] Audrain, J Le traitement de la coqueluche par l'ether, Bull et mém Soc. méd. d hôp de Paris **44**: 795 (June 11) 1920

[2] Castorina, G: The Ether Treatment of Whooping Cough, Pediatria **31**: 151 (Feb 1) 1923.

[3] Macciotta, G.: Ether in the Treatment of Whooping Cough, Pediatria **32**: 159 (Feb. 1) 1924.

[4] Bedo, J.: Ether in the Treatment of Whooping Cough, Ztschr f. Kinderh **35**: 325 (June) 1923.

[5] Tow, A: Intramuscular Use of Ether in Pertussis, Am J Dis. Child **29**: 477 (April) 1925

weeks after that, but without a whoop and without vomiting, and sleep was practically undisturbed.

The other children in this series all showed some benefit, but not nearly as marked as was seen in those just cited. The improvement was sufficiently definite, however, to warrant a belief that ether in pertussis is a valuable remedial measure; whether specific or sedative only, I shall discuss presently.

I have said that no necrosis occurred in any of the cases treated, but that one local reaction was seen; nevertheless, the fear of the development of necrosis is sufficient to prevent one from using ether by intramuscular injection in any but the more severe cases of pertussis. Tow's series showed eight instances of necrosis in a total of 385 injections. It is a small percentage, to be sure, but I imagine it would be difficult to convince a mother that the development of a slough in the buttocks was part of the most modern treatment of whooping cough.

Table 1—*Ether by Intramuscular Injection*

Case	Age	Stage of Disease	No of Injections	C c in Each Injection	Result and Comment
1	8 yr	Paroxysmal	3	2, 2, 2	No result
2	6 yr.	Paroxysmal	3	2, 2, 2	No result
3	4 yr	Late catarrhal	3	2, 2, 2	Better nights; cessation of vomiting
4	3 yr	Late catarrhal	3	2, 2, 2	Better nights; cessation of vomiting
5	1½ yr	Severe paroxysmal	3	1.5, 2, 2.5	Rapid control of paroxysms; good nights
6	7 yr	Severe paroxysmal	3	2, 2, 2	Rapid control of paroxysms; good nights
7	4 yr	Extreme paroxysmal	3	2, 3, 3	Immediate control of severe vomiting and extreme paroxysms; good nights; almost complete cure
8	6 mo	Paroxysmal	3	1, 2, 2	Better nights; control of vomiting; shorter course, four weeks
9	8 mo.	Paroxysmal	3	1, 1.5, 2	Good nights; control of vomiting
10	14 mo	Late paroxysmal	5	1, 2, 2, 2, 2	Complete cure
11	16 mo	Severe paroxysmal	1	3	Immediate and lasting improvement
12	7 wk	Paroxysmal	6	1, 1.5, 2, 2, 2, 2	Immediate relief; good nights; no vomiting
13	2 yr.	*Paroxysmal*	*3*	*1, 2, 2*	*Control of vomiting;* fair nights
14	2 yr.	Paroxysmal	3	1, 2, 2	Moderate improvement, not marked
15	4 yr	Paroxysmal	4	2, 2, 2, 2	Definite improvement; good nights
16	15 mo.	Paroxysmal	4	2, 2, 2, 2	Definite improvement; good nights
17	1½ yr.	Late paroxysmal exhaustion	5	1.5, 2, 2, 2, 2	Control of vomiting; paroxysms better; good nights
18	2 wk.	10 days	5	1, 0.5, 2, 2, 2	No improvement; died

I have felt that this risk of necrosis was one of the main drawbacks of the ether treatment, another being the intense, though momentary pain occasioned by the injections.

It occurred to me that since the benefit that was derived from this treatment was in all probability the result of the excretion of the ether in the pulmonary alveoli, and the bathing of the respiratory mucous membrane in a weak solution of ether, any method of administration that would effect a similar excretion through the pulmonary alveoli should show similar results. What seems important is that the ether be delivered from the blood to the alveoli. Accordingly, I chose the method of giving the ether in olive oil by rectum as in all probability being as good as the intramuscular route. The method is by no means new, for ether anesthesia by rectal administration in olive oil has been in use for years, though it has never attained great popularity. Since starting this work I found that Mason [6] reported having used high rectal injections of 6 c.c. of a 40 per cent. solution of ether in olive oil in four cases, with benefit in two.

In order to determine whether a weak solution of ether in oil was irritating or not, twenty-six children in the wards of the Children's Memorial Hospital, not suffering from pertussis, were given 15 c.c. of olive oil containing 1, 2 and 5 c.c. of ether. In no instance was it found to be irritating. It appeared on the breath in from two to twenty minutes and remained quite noticeable on the breath for from four to six hours. The solutions were generally well retained, in most instances for several hours, but for very short periods in the case of very young infants. An interesting observation was in an infant aged 6 months, who was given 15 c.c. of olive oil with 2 c.c. of ether, which was retained not longer than one minute, on whose breath the ether was quite evident for upward of one and a half hours.

These observations would indicate that children can tolerate weak solutions of ether in olive oil by rectum quite well, and that sufficient ether is absorbed, even if it is kept only a short time, to render the breath quite ether-laden for a considerable period of time.

The advantages of this method are obvious. The treatment can be easily administered by the mother or the nurse. The child is not in fear of a painful intramuscular injection. The dangers of necrosis are completely eliminated and the treatment can be continued without harm for a much longer time.

Twenty-one children with whooping cough have been treated by this method. I have used 1 dram (3.75 c.c.) of ether to the ounce (30 c.c.) of olive oil, one-half ounce (15 c.c.) being injected into the rectum twice daily. The results compare favorably with the intramuscular series. It should be noted that the two groups do not represent identical types of cases. The intramuscular group, with two exceptions, were all well advanced severe cases in which this measure was resorted to as a means of seeking some little relief. Many cases of pertussis were seen during this period in which ether was not tried. When I began using ether in oil by rectum, on the other hand, it was prescribed in all cases as a simple and easily administered remedy. This group, therefore, represents a mixture of the milder and more severe, and of the early and later types.

Thirteen of the twenty-one cases, or 61.9 per cent., showed marked improvement, as was evidenced by a lessened number of paroxysms, control of vomiting and more restful nights. In seven of these the improvement amounted to an almost complete cessation of the whoop and almost wholly undisturbed nights. Slight but definite improvement was seen in six cases, or 28.7 per cent., and no appreciable result in two cases, or 9.5 per cent. The total percentage of cases, therefore, in which some improvement was demonstrable was 90. In all, the best results were seen in the children whose cough had progressed well into the paroxysmal stage; that is, after the infectious period when the symptoms are due to spasm and excessive irritability of the larynx, rather than to the direct action of a specific micro-organism. It is in this stage that one would expect a nonspecific sedative remedy to show its greatest effect. Particularly is this true in the more severe cases in which extraneous factors, such as nervousness, tend to maintain the severity of the cough beyond its usual time.

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[6] Mason, C. C The Treatment of Pertussis with Intramuscular Injection of Ether, J A M A. **81**: 2114 (Dec. 22) 1923.

In this series it was possible to continue the ether treatment over a period of one or two weeks, injections being given morning and night without apparent harm. No drowsiness was noted in any of the cases, nor was rectal irritation complained of. The most marked improvement in the series was seen in the control of vomiting, for this was either lessened or completely controlled in thirteen of the cases, while better nights were reported in eleven of the twenty-one cases.

One of the best results seen in this group was in an infant, 2 months of age (still under treatment), who can be kept completely under control with 2 c.c. of ether in oil for a period of six or eight hours. Until the effect of the ether wears off, the child scarcely coughs, takes his food well and sleeps well. As the effect wears off he suffers a number of distressing paroxysms and vomits once or twice until the ether is given again.

Table 2.—*Ether in Olive Oil by Rectum*

Case	Age	Stage of Disease	Injections	C.c. in Each Injection	Result and Comment
1*	7 yr.	Paroxysmal	28, twice daily	2	Unquestioned relief; aggravation noted whenever ether was omitted; no vomiting; good nights
2	6 yr.	Early paroxysmal	28, twice daily	2	Early disappearance of whoop; vomiting; slept all night after one week
3*	5 yr.	3 months	20, twice daily	2, 3	Improvement after one week, then returned; peribronchial glands
4*	7 yr.	Early paroxysmal	14, twice daily	2	Slight relief; complicated by measles
5*	5 yr.	Early paroxysmal	14, twice daily	2	Slight relief; complicated by measles
6	1 yr.	Paroxysmal	14, twice daily	2	Slight relief; control of vomiting
7	6 yr.	Paroxysmal	10, twice daily	2	Slight relief; control of vomiting
8	1 yr.	Paroxysmal	14. twice daily	2	Very moderate relief
9*	5 yr.	Paroxysmal	20, twice daily	2	Marked relief; good nights; no vomiting
10	5 yr.	Paroxysmal	14, twice daily	2	Somewhat better nights
11*	6 yr.	Paroxysmal	14, twice daily	2	No vomiting; good nights
12*	3 yr.	Paroxysmal	14, twice daily	2	No vomiting; good nights
13	2 yr.	Paroxysmal	14, twice daily	2	No improvement
14	2 yr.	Paroxysmal	20, twice daily	2	Good nights; less frequent paroxysms; no vomiting
15*	4 yr.	Paroxysmal	14, twice daily	2	Considerable improvement; vomiting controlled; good nights
16*	1½ yr.	Paroxysmal	14, twice daily	2	Considerable improvement; vomiting controlled; good nights
17*	2 mo.	Paroxysmal	6, twice daily	2	No vomiting; very good nights when ether is given
18	2 yr.	Late paroxysmal	10, twice daily	2	Immediate relief; good nights; vomiting stopped
19	1 yr.	Late paroxysmal	10, twice daily	2	Good nights; severity of paroxysms controlled
20	2 yr.	Late paroxysmal	10, twice daily	2	Good nights; severity of paroxysms controlled
21*	1½ yr.	Early paroxysmal	4, twice daily	2	Good nights; no vomiting

* Still under treatment.

The beneficial action of ether depends on its excretion through the pulmonary alveoli and can be compared to the beneficial action of inhalations in other forms of laryngeal inflammation, in which the affected area is bathed in an atmosphere laden with the inhaled vapors. The only difference here is that in the case of ether the remedy is exhaled, but the underlying principle is doubtless the same. To attribute any specific bactericidal action to ether in the necessarily weak dilutions in which it is present in the expired air is largely speculative, and must await scientific proof; meanwhile, the more logical belief, that it is purely and temporarily sedative and transitory, seems more in accord with my experience. For instance, in several instances, mothers have volunteered the information that omitting the ether for a single night caused a return of the paroxysms with their usual severity.

The results shown here, as well as the generally favorable results reported by other writers, should make one feel that ether therapy in pertussis, though by no means a cure, is still a valuable adjunct to our therapeutic armamentarium in this dreaded disease. A measure which will bring any relief at all to two infants with whooping cough, one 7 weeks of age and one 2 months of age, as it unquestionably did in two of the cases here reported, can under such circumstances almost be called life saving.

If, therefore, ether is valuable at all, and if its effect depends solely on its presence in and excretion from the pulmonary alveoli, the advantage of the rectal over the intramuscular method is obvious.

We have a harmless remedy in the doses given, of which the patient is totally insensible, which exerts its sedative action continuously over a period of hours, and which by rectal injection in olive oil can be easily and repeatedly administered by the mother.

We can conclude with Macciotta that the ether treatment is a "therapeutic measure not to be despised"; and one might add that by the rectal method of administration, it has truly been robbed of its sting.

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INFLUENCE OF FOCAL INFECTION AND THE PATHOLOGY OF ARTHRITIS

RESULTS OF EXPERIMENTS [*]

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Our purpose in this communication is to present experimental data that bear on the nature of the influence of focal infection and the pathology of arthritis. Some phases of the work also throw light on carbohydrate metabolism, and this aspect has been discussed elsewhere.[1] In order to make plain the significance of the experiments and the reasoning that has led up to them, a brief summary of some previous work will be necessary. This summary, together with new data, will be taken up in the following order:

1. The sugar tolerance in arthritis.
2. The blood gases in arthritis.
3. Absorption from the gastro-intestinal tract in arthritis.
4. The influence of the circulation on the sugar tolerance in arthritis.

In view of the interdependence of the several parts of the present studies a certain amount of repetition will be unavoidable.

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[*] Read before the College of Physicians, Philadelphia, June 3, 1925.

[*] From the Laboratory of Clinical Chemistry, Presbyterian Hospital. The work here reported is part of a study on chronic arthritis in collaboration with Robert B. Osgood, M.D., of Boston. The expenses of the investigation were defrayed by contributions from several sources, including a number of patients.

[1] Cajori, F. A.; Crouter, C. Y., and Pemberton, Ralph: J. Biol. Chem., to be published.

THE SUGAR TOLERANCE IN ARTHRITIS

In the course of a study of chronic arthritis in the army, it was demonstrated by Pemberton and Foster[2] that a lowered sugar tolerance accompanies this disease in more than 60 per cent. of all cases. We have found a low sugar tolerance in 53 per cent. of seventy-seven arthritic patients in civil life. Comparable results have been reported by Holsti,[3] Fletcher,[4] Warfield[5] and Hench.[6]

Observations in a long series of cases showed that this lowered tolerance is more or less proportional to the severity of the arthritis. It was also shown that as arthritic patients improve, irrespective of the measures accomplishing improvement, the lowered tolerance returns or tends to return to normal. It was also shown, however, that this return to normal is most abrupt after the removal of a causative focus of infection. This point is well illustrated in the example of a soldier, aged 19, with acute arthritis of one hip and greatly diseased tonsils: February 27, after he was fed 100 gm. of glucose, the sugar reached 190 mg. per cubic centimeter. Two weeks later, March 14, his tonsils were removed, and he made a prompt recovery from the arthritis. March 28, two weeks after his tonsillectomy, a study of his sugar tolerance gave a normal curve. As a corollary to this can be cited the case of a large robust soldier, studied as a normal control, in whom a normal sugar tolerance was obtained, the blood sugar not rising above 127 mg. per cubic centimeter. Fourteen days later, however, he developed an acute frontal sinusitis, and three days after the onset of this a lowered sugar tolerance was obtained, the blood sugar reaching 185 mg. per cubic centimeter, with a slight glycosuria.

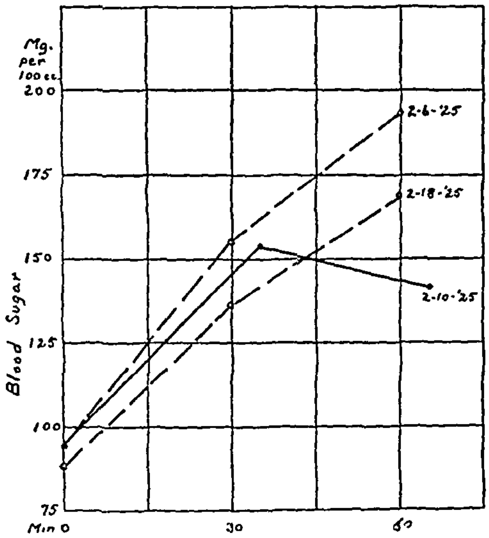

Chart 1 (Case 10).—Effect of postural interterence with the circulation on sugar tolerance. Broken line, limbs elevated; solid line, normal position.

As remarked above, a lowered sugar tolerance in arthritis may return to or toward normal, following the institution of other successful measures of therapy, such as the use of nonspecific protein or the application of a lowered caloric intake.[2]

It is clear, therefore, that a lowered sugar tolerance stands in close relation to the phenomena of arthritis, on the one hand, and the influence of frank focal infection, on the other.

A lowered sugar tolerance, however, is by no means specific for arthritis. It was observed by Hamman and Hirschman[7] to stand in some relation to certain thyroid disturbances, and it has been observed to accompany furunculosis.[8] It has been regarded as accompanying certain other nondiabetic conditions, but the evidence as to this is not final, and it seems probable at present that in some of these, at least, it is a function of an unrecognized inflammatory process or focal infection. This point is brought out in a series of miscellaneous causes studied by Pemberton and Foster.[2]

Attention has been called elsewhere[1] to the fact that the lowered sugar tolerance of arthritis differs from that seen in diabetes in that there is no failure of combustion of glucose,[9] and that the characteristic effect of insulin is evidenced by a fall in blood phosphorus.[1] Up to a certain renal threshold[2] there is no glycosuria, and observation of arthritic patients over a long series of years shows that they develop nothing of the diabetic syndrome. In fact, it has been shown by one of us[10] that the combination of arthritis and diabetes is at least unusual, and severe coincident examples of each have not been encountered. It will be shown later that the low sugar tolerance here under discussion can arise by a different process.

Attention is here directed at considerable length to the mechanism of a lowered sugar tolerance because of the degree to which it parallels arthritis, and because of the paucity of data reflecting the dynamic pathology of this disease. It was believed that data elucidating this mechanism would contribute importantly toward an understanding of arthritis.

THE BLOOD GASES IN ARTHRITIS

Attention has been called previously[11] to the fact that measures which increase the local or systemic blood flow or the systemic metabolism tend to have a favorable influence on the rheumatoid syndrome. Examples of this are to be seen in the effects of massage, exercise and the application of external heat.[12] Studies were therefore carried out on the respiratory functions of the blood with the aim of seeing whether these are at fault in arthritis. In a series of such studies by Pemberton, Hendrix and Crouter,[13] no disturbance of the dissociation curves of the blood for oxygen or carbon dioxid could be detected, but it was observed that during the conduction of a test revealing a lowered sugar tolerance, there takes place in most cases a rise in the percentage saturation of that blood with oxygen. That is to say, the ratio of the oxygen content to the oxygen capacity increases, which means that more oxygen is left unutilized. It was further observed that a small difference in the percentage saturation of the peripheral venous blood with oxygen existed between groups of normal persons and the groups of arthritic patients studied. The series has since been extended and now includes 132 arthritic patients and fifteen normal persons. The average percentage oxygen saturation of hemoglobin for the arthritic group was 56, and for the normal, 43. The figures for normal persons are in general consonance with those obtained by Cullen and Robinson.[14] They obtained an average of 53 per cent. on twenty-three supposedly normal students who had, however, partaken of a moderate breakfast, in contrast to the normal persons studied by us, who were fasting. Our figures and those of Cullen and Robinson are lower than those of some other workers.[15] This difference is presumably due to a number of factors not wholly understood, but in the present connection we are concerned only with a comparison of the arthritic and normal bloods obtained under identical conditions. The difference between the average for the normal group and the arthritic group is small and will not bear much emphasis; but on analyzing the figures for arthritic patients, from which the average for that group was made up, it appears that some cases gave higher figures than were ever shown by normal individuals. Thus, the range for the normal group is from 27 to 67 per cent., and for the arthritic, from 25 to 95 per cent. There is, therefore, limited but definite evidence that the peripheral venous blood in arthritic patients may show a higher percentage saturation with oxygen than occurs in health, under similar conditions. Some explanation of this is afforded by the following:

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[2] Pemberton, Ralph; and Foster, G. L.: Studies on Arthritis in Army, Based on Four Hundred Cases, Arch. Int. Med. **25**: 231-282 (March) 1920.

[3] Holsti, O.: Acta. med. scand., supp. **3**: 137, 1922.

[4] Fletcher, A. A.: Dietetic Treatment of Chronic Arthritis and Its Relationship to Sugar Tolerance, Arch. Int. Med. **30**: 106 (July) 1922.

[5] Warfield, L. M.: J. Michigan M. Soc. **22**: 461 (Nov.) 1923.

[6] Hench, P. S.: Atlantic M. J. **28**: 425 (April) 1925.

[7] Hamman, Louis; and Hirschman, L. L.: Blood Sugar, Arch. Int. Med. **20**: 761 (Nov.) 1917.

[8] Olmsted, W. H., and Gay, L. P.: Study of Blood Sugar Curves Following a Standardized Glucose Meal, Arch. Int. Med. **29**: 384 (March) 1922.

[9] Cecil, R. L.; Barr, D. P., and Du Bois, E. F.: Clinical Colorimetry: Observations on Metabolism of Arthritis, Arch. Int. Med. **29**: 583 (May) 1922.

[10] Pemberton (Footnote 11).

[11] Pemberton, Ralph: Am. J. M. Sc. **166**: 833 (Dec.) 1923.

[12] Pemberton, Ralph; Cajori, F. A., and Crouter, C. Y.: Physiologic Effect of Massage, J. A. M. A. **83**: 1761 (Nov. 29) 1924.

[13] Pemberton, Ralph; Hendrix, B. M., and Crouter, C. Y.: J. Metabol. Res. **2**: 301 (Sept.) 1922.

In the course of study of the influence of various measures having benefit toward the rheumatoid syndrome, attention was directed to the application of external heat. It was observed, among other findings, by Pemberton, Hendrix and Crouter [13] that the percentage oxygen saturation of the peripheral blood tends to rise, as the result of the subjection of a person to an electric bake, applied in the usual therapeutic manner. This rise in the oxygen saturation is presumably due to the acceleration in the circulation that occurs, and is in keeping with the statement by Wells [16] that blood from a hyperemic area contains more oxygen and less carbon dioxid than normal blood.

These several observations suggest that in the arthritic patient there is a change in the circulatory conditions or rate such that the tissues do not extract from the blood as it passes through them the usual amount of available oxygen. In connection with the blood flow in arthritis it is to be noted that analysis of the beneficial effects of external heat, massage and exercise, on the rheumatic syndrome,[11] shows that the first and last of these measures produce opposite effects on the acid-base equilibrium of the blood, and that the favorable influences of all three measures are apparently due chiefly to their effect on the circulation.

ABSORPTION FROM THE GASTRO-INTESTINAL TRACT IN ARTHRITIS

It has been further observed by one of us [17] that in a considerabl [illegible] hritic patients particularly of the so- [illegible] type, undoubted benefit may accrue from the application of a reduced caloric intake. This observation has been corroborated by Fletcher,[18] in two series of fifty and 100 cases, respectively, by Cecil and Archer [19] and by others. It seemed possible therefore, in view of the evidence suggesting an increased circulatory rate in arthritic patients, that in arthritis absorption from the intestinal tract and stomach might take place too rapidly and that the influence of a lowered dietary could be explained by avoidance of an abrupt or undue absorption. It seemed also possible, for the same reason, that the lowered glucose tolerance in arthritis might be referable to an unduly rapid absorption of glucose. It was therefore determined to test this by feeding urea and potassium iodid coincidentally with the glucose, in the conduction of a test for lowered sugar tolerance. If the difference between a normal and lowered sugar tolerance is largely a difference in the rate of absorption of sugar from the intestine, corresponding differences in the rise of nonprotein nitrogen in the blood and in the rate of excretion of nitrogen and iodid might be expected when urea and potassium iodid are given with the sugar. Urea and potassium iodid are diffusible substances, presumably readily absorbed from the intestinal tract. Mendel and Baumann [20] found that potassium iodid is absorbed from the mammalian stomach. In the present studies, nonprotein nitrogen of the blood and total urinary nitrogen were determined by Folin's methods.[21] Iodids were determined in the urine by oxidizing the iodid to iodin with nitrous acid, extracting the iodin with chloroform, and after washing the chloroform free of nitrous acid, titrating the iodin present with hundredth normal sodium thiosulphate.[22] The appended tables show, however, that the nonprotein nitrogen of the blood rose no higher in cases with a low sugar tolerance, and therefore a high concentration of sugar in the blood, than it did in cases showing a normal sugar tolerance, and therefore a low glucose concentration. Similarly, the excretion of iodin and total nitrogen in the urine showed no increase in the urine in thirty minute periods in the cases of low sugar tolerance as compared with the cases of normal tolerance. There is therefore no suggestion that an increased rate of absorption accounts for the variety of low sugar tolerance under discussion. These observations left the matter open to some other explanation. As an alternative,

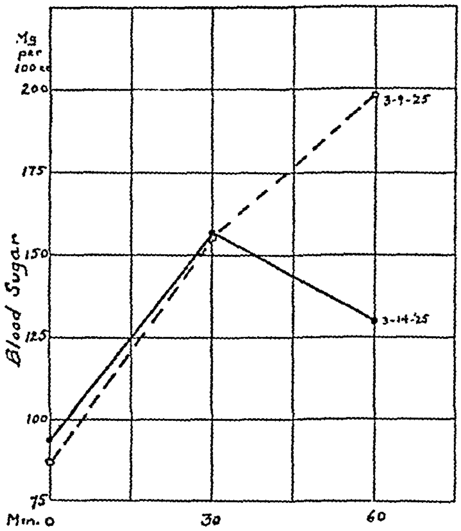

Chart 2 (Case 20).—Effect of postural interference with the circulation on sugar tolerance.

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14. Cullen, G. E., and Robinson, H. W.: J. Biol. Chem. **57**: 533 (Sept.) 1923.
15. Lundsgaard, C.: J. Biol. Chem. **33**: 133 (Jan.) 1918. Goldschmidt, S., and Light, A. B.: Am. J. Physiol. **73**: 127 (July) 1925.
16. Wells, H. G.: Chemical Pathology, Ed. 4, Philadelphia, W. B. Saunders Company.
17. Pemberton, Ralph: Am. J. M. Sc. **161**: 517 (April) 1921.
18. Fletcher, A. A.: Dietetic Treatment of Chronic Arthritis and Its Relationship to Sugar Tolerance, Arch. Int. Med. **30**: 106 (July) 1922.
19. Cecil, R. L., and Archer, B. H.: Arthritis of the Menopause, J. A. M. A. **84**: 75 (Jan. 10) 1925.
20. Mendel, L. B., and Baumann, E. J.: J. Biol. Chem. **22**: 165 (Aug.) 1915.
21. Folin, Otto: Laboratory Manual of Biological Chemistry, Ed. 3, New York, D. Appleton & Co., 1922, pp. 59, 235.
22. Neuberg, C.: Der Harn, Berlin, Julius Springer **1**, 810, 1911.

it seemed possible that the mechanism producing a high percentage saturation of oxygen during the conduction of a test revealing a lowered sugar tolerance was referable, not to an increased rate of circulation, but, to a failure of the blood adequately to reach certain areas or tissues of the body. The effect of this would be, equally, to leave unutilized some of the available constituents of the blood. This explanation would also account for the higher percentage oxygen saturation observed in some fasting arthritic patients.

Table 1.—*Absorption from the Alimentary Tract in Arthritis Following Ingestion of Glucose, Urea and Potassium Iodid*

		Blood Analysis			Urine Analysis				
Subject	Date	Time, Minutes	Blood Sugar, Mg. 100 C.c.	Nonprotein Nitrogen, Mg. 100 C.c.	Time, Minutes	Volume per ½ Hour, C.c.	Iodin per ½ Hour, Mg.	Total Nitrogen per ½ Hour, Mg.	Sugar, Gm.
1	12/ 9/24	0	86	28	35	..	16	...	0
		30	143	33	70	160	10	241	0
		60	164	39	140	10	13	96	0
2	12/15/24	0	90	26	25	25	0	...	0
		30	167	31	55	25	7	...	0
		75	139	32	..	..	..	...	...
		95	137	38	105	24	10	...	0
3*	12/18/24	0	81	23	30	26	0	...	0
		35	125	25	75	38	9	...	0
		65	102	32	130	33	13	...	0
4	1/14/25	0	85	28	0	..	0	...	0
		30	125	31	35	20	3	...	0
		75	110	36	90	55	10	...	0
					170	60	13	...	0
5	1/19/25	0	95	34	40	30	1	...	0
		30	176	40	90	30	8	285	0
		85	186	38	140	36	12	359	0
6	1/20/25	0	78	..	..	..	..	...	...
		30	128	33	..	..	..	...	...
		90	85	35	190	10	3	...	0
7	1/22/25	0	97	38	0	14	0	147	0
		30	139	42	45	12	2	134	0
		60	215	48	105	15	10	235	0
8	1/31/25	0	95	39	0	8	0	123	0
		40	179	40	45	23	2	194	0
		85	166	42	90	30	7	333	0
9	2/20/25	0	100	38	0	15	0	173	0
		30	129	39	40	25	2	236	0
		60	130	43	85	45	9	298	0

* Normal person.

THE INFLUENCE OF THE CIRCULATION ON THE SUGAR TOLERANCE IN ARTHRITIS[23]

It was therefore determined, as an experimentum crucis, to reduce the blood flow or interfere with it in some part or parts of the body in such a way as to simulate a condition in which, for example, a large capillary area is closed, and then to conduct a test of sugar tolerance in the usual manner. A positive result, showing the induction of a lowered tolerance, would be obviously confirmatory of the foregoing hypothesis. The method decided on was to place normal and arthritic persons, whose sugar tolerance had been determined as essentially *normal, in the recumbent position* with the legs and one arm elevated at right angles to the body, and then to carry out a test of sugar tolerance in the usual manner. In practice it was found useful for the subject to lie on a bed, the head or foot of which touched a wall, and to allow the elevated legs to rest against the wall for support, thus obviating any muscular or other effort. The elevated arm was supported by a pillow and by a loop of bandage, attached to a clothes tree, through which a finger could be hooked. This position was maintained throughout the experiment for an hour or an hour and a half. Shortly after raising the legs, evidences of inadequate circulation were apparent in the low surface temperature, quick collapsing pulse in the dorsalis pedis artery and, later, a gray cyanosis. In some cases cramps of the posterior tendons or muscles of the calf or thigh occurred. The blood under these circumstances doubtless reaches the periphery of the limbs concerned in a somewhat explosive manner, after the fashion of a Corrigan pulse, since the column within the vessels during diastole lacks its usual support or vis a tergo. By the same token, it would appear that the venous return is much expedited by gravity, the valves being designed to operate in the opposite direction, so that the tissues as a whole have a curtailed contact with the blood, and less opportunity for the respiratory and other interchanges.

Experiments were carried out on two normal persons and thirteen arthritic patients. The data show that in an important percentage of arthritic patients (60 per cent.) who have had from the outset, or have acquired, an essentially normal sugar tolerance, it is possible, by means of interfering with the blood flow in three limbs, to induce a lowered sugar tolerance comparable to that seen in 60 per cent. of arthritic patients at large. This low tolerance has been induced, so far, in the arthritic patients only and not in the normal subjects. This fact

Table 2.—*Effect of Circulatory Changes, Resulting from Elevation of the Limbs, on the Sugar Tolerance of Arthritic Patients**

	Seated			Legs Elevated		
Subject	Date	Time, Minutes	Blood Sugar, Mg. per 100 C.c.	Date	Time, Minutes	Blood Sugar, Mg. per 100 C.c.
10	2/10/25	0	94	2/ 6/25	0	94
		35	154		30	155
		65	142		60	193
				2/18/25	0	88
					30	137
					60	169
11 †	4/10/24	0	99	2/12/25	0	88
		45	112		30	119
		90	109		60	104
12 †	....	..	...	2/13/25	0	86
					35	111
					75	84
13	2/19/25	0	87	2/16/25	0	90
		30	135		30	131
		60	132		60	123
2	2/20/25	0	81	2/17/25	0	90
		30	157		30	169
		65	124		60	197
14	2/28/25	0	87	2/25/25	0	94
		30	162		35	164
		60	177		65	162
15	3/10/25	0	88	3/ 3/25	0	87
		30	137		30	122
		60	164		60	148
16	4/25/25	0	86	3/ 4/25	0	91
		35	148		30	144
		65	182		65	205
17	3/10/25	0	95	3/ 4/25	0	88
		30	108		35	133
		60	97		65	162
18	3/12/25	0	101	3/ 5/25	0	105
		30	149		30	161
		60	153		60	176
19	3/13/25	0	104	3/ 6/25	0	94
		55	168		50	156
		95	159		85	161
20	3/14/25	0	91	3/ 9/25	0	87
		30	156		30	155
		60	130		60	198
21	3/16/25	0	92	3/11/25	0	86
		32	150		30	152
		65	101		60	155
22	....	..	...	2/24/25	0	87
					30	112
					60	89
23	....	..	...	3/17/25	0	89
					30	121
					65	130

* This table will also appear in the Journal of Biological Chemistry.
† Normal person.

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[23] We are indebted to Dr. E. G. Peirce for cooperative assistance in several phases of this work.

may relate it to a possible exaggeration, by the position assumed, of a comparable, already existing state of affairs in the peripheral circulation, rather than merely to a disturbance of circulation created "de novo." A striking feature of the charts is the slant of the curves which show, in most instances, that not only was the blood sugar higher in the experimental position at the end of an hour but it was still mounting at a time when in the normal position it had already fallen.

Table 3.—*Effect of Elevation of the Limbs on Secretion of Urine*

	Seated						Legs Elevated					
Subject	Date, 1925	Sample*	Volume per Hr., C.c.	Specific Gravity	p_H	Sugar, Gm.	Date, 1925	Sample*	Volume per Hr., C.c.	Specific Gravity	p_H	Sugar, Gm.
10	....	...	...	.....	...	...	2/18	1	169	.....	6.4	0
								2	324	.....	6.6	0
13	2/19	1	70	.....	6.8	0	2/16	1	42	.....	6.0	0
		2	146	.....	7.0	0		2	275	.....	6.8	0
2	2/20	1	51	.....	6.8	0	2/17	1	40	.....	5.2	—
		2	88	.....	6.8	0		2	276	.....	6.6	0
							6/12†	1	35	1.023	6.4	—
								2	100	1.013	7.2	—
14	2/28	1	72	1.021	7.2	0	2/25	1	51	1.020	7.8	—
		2	25	1.026	6.0	0		2	224	1.010	7.2	0
15	3/19	1	55	1.015	5.4	0	3/ 3	1	99	1.006	6.4	0
		2	83	1.011	6.4	0		2	168	1.005	6.4	0
16	4/25	1	38	1.032	5.0	0	3/ 4	1	17	.....	5.0	0
		2	142	1.015	5.4	0.86		2	77	.....	6.0	1.05
17	3/10	1	35	1.029	5.2	0	3/ 4	1	22	1.022	5.0	0
		2	45	1.025	6.0	0		2	238	1.006	5.2	0
18	3/12	1	26	1.032	5.0	0	3/ 5	1	30	.....	5.2	0
		2	27	1.030	5.2	0		2	139	1.011	6.4	0
19	3/13	1	51	1.016	6.2	0	3/ 6	1	54	1.017	6.0	0
		2	178	1.007	6.6	0		2	345	1.006	6.6	0
20	3/14	1	33	1.025	5.4	0	3/ 9	1	35	1.021	5.0	0
		2	244	1.006	6.8	0		2	323	1.003	6.6	tr.
21	3/16	1	24	1.023	5.0	0	3/11	1	20	1.026	6.5	0
		2	33	1.024	5.2	0		2	136	1.010	7.4	0
							6/ 9†	1	7	.....	5.2	—
								2	20	.....	6.8	—
11‡	....	...	...	.....	...	...	2/12	1	34	.....	...	—
								2	56	.....	...	0
12‡	....	...	...	.....	...	...	2/13	1	58	.....	...	0
								2	167	.....	...	0
24	....	...	...	.....	...	...	6/ 1†	1	51	1.019	5.2	—
								2	216	1.006	6.8	—

* Sample 1 was obtained before the experiment; Sample 2, at the end of the experiment.
† No sugar taken.
‡ Normal person.

It will be noted by referring to Table 3 that a marked diuresis accompanied practically all cases in which the legs were elevated. A definite increase in alkalinity was observed to accompany the diuresis in most cases, in keeping with the experience of others who have studied urinary volume and p_H.[24] This diuresis suggests an influence on the kidneys, and it is not inconceivable that the suprarenals may be affected also in view of their close anatomic relation to the kidneys.

A comparable diuresis has been observed by Griffith and Hansell[25] as the result of extra-abdominal pressure.

The relation of these findings to carbohydrate metabolism has been discussed elsewhere.[1] Mention only will be made of the fact that observations on the blood sugar after assumption of the experimental posture, when uninfluenced by glucose feeding, show no increase in sugar. This indicates that the degree of "anemia" in the elevated limbs is not sufficient to cause asphyxia of the tissues and hence hyperglycemia from this cause. It also indicates that hyperemia of the suprarenals is not an operative factor, under fasting conditions, following the experimental position.

The evidence therefore strongly indicates that, whether or not any additional mechanism be concerned, denial to the muscular tissues of their usual degree of contact with the circulating blood interferes with the withdrawal of glucose, so that when sugar is fed, a lowered tolerance results.

That circulatory changes contribute therefore to the pathology of arthritis and constitute part of the effects of focal infection, with both of which a lowered sugar tolerance is so closely associated, is thus clearly suggested. If these observations be correlated with the clinical benefits known to follow measures which improve the blood flow in arthritis, this suggestion becomes even stronger.

SUMMARY

1. It has been shown that 60 per cent. of all arthritic patients present a lowered sugar tolerance and that this tolerance returns toward or to normal after recovery from arthritis, whatever the therapy employed. It does so most abruptly, however, after the removal of causative focal infection. As a corollary to this, the occurrence of an inflammatory process, such as sinusitis, may induce a lowered sugar tolerance in a previously healthy subject with a normal tolerance.

2. Studies of the blood gases, during the conduction of a test revealing a low sugar tolerance, showed that the percentage oxygen saturation of hemoglobin of the venous blood rises in a large majority of cases. The failure to relate this to chemical processes implies that the blood fails to reach all tissues of the body, or that the circulation is accelerated. In either event the result would be to leave some of the normal constituents unutilized. In this connection, it has been shown in a series of arthritic and normal persons, under identical conditions, that the average percentage oxygen saturation of the peripheral blood of the arthritic patients was higher in the ratio of 56 to 43. The range for the arthritic group was from 25 to 95; for the normal group from 27 to 67.

3. In a considerable proportion of arthritic patients, particularly of the "proliferative" type, the application of a restricted caloric diet is of benefit. In view of the suggestions, afforded above, of a possibly increased rate of circulation in arthritis, the hypothesis was advanced that absorption from the gastro-intestinal tract might in consequence be unduly rapid. The benefits of a reduced diet would then be referable to the avoidance of an undue, or unduly rapid, absorption, and the occurrence of a low sugar tolerance would be referable to too rapid absorption. This hypothesis was tested by feeding urea and potassium iodid, coincidentally with the sugar, to arthritic patients with normal and lowered sugar tolerance. The nonprotein nitrogen of the blood and the urinary iodid and nitrogen did not change commensurately with the blood sugar, however. The results gave no support to the theory of an increased rate of absorption in arthritis and left, as one alternative, the theory that the blood inadequately reached some tissues. This failure to reach all tissues might result from closed capillary beds, and would, equally, leave some of the blood constituents unutilized.

4. This hypothesis was therefore tested by interfering, through posture, with the blood flow in the limbs of arthritic and normal persons and then conducting a glucose tolerance test. The results showed that in half of the cases studied it was possible to induce a lowered sugar tolerance in subjects presenting otherwise a nor-

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[24] Henderson, L. J., and Palmer, W. W.: J. Biol. Chem. **22**: 305, 1914. Bazett, H. C.; Thurlow, S.; Crowell, C., and Stewart, W.: Am. J. Physiol. **70**: 430 (Oct.) 1924.
[25] Griffith, J. O., and Hansell, H. R.: Am J. Physiol. **74**: 16, 1925.

mal sugar tolerance. In view of the close relationship of a lowered tolerance to arthritis and focal infection, this evidence approaches proof that a disturbance of the circulation, probably in the nature of closed capillary areas, constitutes an important part of the pathology of arthritis and the rheumatoid syndrome. If these findings are correlated with the well recognized benefits acruing in arthritis from measures which improve the circulation, the evidence becomes stronger.

ACTION OF CARDIAC STIMULANTS IN CIRCULATORY FAILURE DUE TO DIPHTHERIA*

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An important group of drugs that is always in demand in cases of emergency is the class known as the cardiac stimulants. It is true that they form rather an indefinite group and include drugs that have no direct effect on either heart or blood vessels, their only possible influence on the circulation being an indirect one. Perhaps those which are mentioned most commonly in this connection as being useful in cases of circulatory failure in acute infections are strychnin, camphor, epinephrin, digitalis, pituitary preparations and caffein. In this group should probably be included also the various solutions that are used for intravenous injections, such as Ringer's solution, and acacia and glucose solutions. It is true that some of the drugs named have been to a greater or less extent discredited for this purpose, and not so much reliance is placed on them now as there was some years ago. To this group belong especially strychnin and camphor, which various researches have shown to be largely ineffective in cases of acute circulatory failure. The clinical value of the other four drugs is fairly well established, as are also the special indications for the use of the individual members of the group. But, it may be asked, is confidence in these drugs well placed? The value of any remedy in cases of acute circulatory failure in man is naturally very hard to estimate, and it is not at all impossible that the muscle of a heart which has undergone profound pathologic changes may react in a manner different from one that is normal.

The objection is sometimes made to pharmacology that it is a study of the effects of drugs on the tissues and organs of normal animals, and that it is impossible to transfer results so obtained to the conditions encountered in clinical practice in which the organs have been the subject of more or less extensive pathologic changes. It was for this reason that the research reported here was carried out, with an effort to duplicate as closely as possible in the laboratory, conditions encountered in the sickroom, with the difference, of course, that in certain circumstances more radical experimental procedures were carried out than would be allowable in the case of the human subject.

For the purpose of producing changes in the heart muscle, diphtheria toxin was employed, as it has been recognized for a long time that this toxin has a very powerful effect on all cells, including those of the heart muscle. In fact, it is doubtless true that failure of the heart is today the most common cause of death in diphtheria. It is not necessary to review the numerous researches that have been carried out to elucidate the changes which are produced in the heart by this toxin, as recently this was done very completely by Warthin,[1] who pointed out that the essential lesion of the heart in diphtheria is a toxic parenchymatous hyaline necrosis associated frequently with fatty degenerative infiltration or with cloudy swelling.

An interesting question regarding circulatory failure in diphtheria is whether it is cardiac or vascular in origin, and if vascular, whether the difficulty is central or peripheral. The early work of Rombert, Passler, Bruhns and Muller [2] pointed to a paralysis of the vasomotor center as primary, with a secondary failure of the heart. This view, however, is directly contradicted by the work of Porter and Pratt,[3] which showed that the activity of the vasomotor center is unimpaired in diphtheria. On the other hand, more recently, Yabe [4] has concluded that the low blood pressure was indeed due to failure of the vasomotor center.

There are the same contradictions as to the part that the heart plays in the production of the failure of the circulation. Beck and Slapa [5] considered that the heart was primarily at fault, as it was unable to raise the blood pressure when the abdominal aorta was compressed. Opposed to this view, however, is the work of MacCallum,[6] which showed that the actual work performed by a diphtheria poisoned heart was as great as that of a normal heart. In considering the last mentioned paper and its importance in the settlement of the question under discussion, it must be borne in mind that MacCallum injected massive doses of toxin intravenously into dogs and then carried out his experiment on the hearts of these animals only a few hours later. For instance, the efficiency of the heart of Dog 13, which was injected with 3 c.c. of toxin at 10: 30, was tested at 4: 45, while other hearts were tested in from ten to twelve hours. Doubtless, the results obtained by MacCallum are correct under the conditions described, but they can hardly be carried over to explain the circulatory failure in human diphtheria in which the absorption of the toxin is gradual, and days are allowed for pathologic changes in the heart to take place. As a matter of fact, MacCallum gives no information regarding the pathologic findings in the hearts with which he worked. The whole question of the effect of diphtheria toxin on the cardiovascular system has recently been discussed by Marvin,[7] who concludes that toxic myocarditis is present in a large proportion, possibly in all, of the patients who die of circulatory failure. He regards the evidence in favor of a primary failure of the peripheral circulation as not conclusive.

PRESENT INVESTIGATION

In our experiments, we tried to imitate the slow absorption seen in the clinical conditions by injecting the toxin subcutaneously in small divided doses, from

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* From the Pharmacological Laboratory of the University of Michigan Medical School.

* Read before the Association of American Physicians, Washington, D. C., May 4, 1925.

1. Warthin, A. S.: J. Infect. Dis. **35**: 32 (July) 1924.
2. Rombert, Passler, Bruhns and Muller: Deutsch. Arch. f. klin. Med., 1899, p. 652.
3. Porter and Pratt: Am. J. Physiol. **33**: 431, 1914.
4. Yabe, S.: J. Pharmacol. & Exper. Therap. **19**: 1 (Feb.) 1922.
5. Beck and Slapa: Wien. klin. Wchnschr., 1895, p. 323.
6. MacCallum: Am. J. M. Sc. **147**: 37, 1914.
7. Marvin, H. M.: Effect of Diphtheria on Cardiovascular System: Heart in Faucial Diphtheria, Am. J. Dis. Child. **29**: 433 (April) 1925.

0.05 to 0.15 c.c. being injected every second or third day. Most of the dogs stood two or three injections, dying in from four to six days. They exhibited the signs of an acute illness, refusing food and lying quiet, and later becoming apathetic. Severe hemorrhages from the bowel and from the respiratory passages occurred late in the illness, and dogs showing these symptoms usually died in a few hours.

In order to avoid extensive operative manipulations, our experimental procedures in most cases were confined to blood pressure measurements. In a few animals heart records were taken, but dogs so toxic as these did not stand such operations well.

After the experiment was completed, a necropsy was performed, the heart was removed, together with pieces of other organs showing gross pathologic changes, and these were placed in solution of formaldehyd and turned over to Professor Warthin of the department of pathology of the university, who made the pathologic examinations of the material.

In order to give our results in as concise a form as possible, the dogs may be grouped into three classes, as within these groups the individual animals reacted practically alike.

In the first group may be included all those dogs which were severely ill. They lacked appetite and were weak, but they could stand and perhaps stagger about the room and would respond when spoken to. For these animals, an anesthetic was necessary in order to carry out the simple operative measures, and for this purpose ether was found to be most suitable To some dogs, we gave paraldehyd by mouth. This was not very successful, proving to be unusually toxic, as doses considerably below the usual anesthetic doses proved fatal in a very short time.

The dogs in Groups 2 and 3 were alike in being in imminent danger of death. They had passed through the stages described in Group 1, and had had, in most cases, one or more hemorrhages either from the bowel or from the respiratory passages, or from both. They were very weak and apathetic and in many cases were in a condition of complete coma. These animals could be operated on without any anesthetic, showing no sign of sensation except that in a few instances, when the trachea was being isolated, a slight change in respiration was noticed. Group 2 survived the operative procedures and served their purpose for some hours, while those in Group 3 died on the table while the cannulas were being inserted, and they therefore served for the investigation of these drugs which are used only in conditions of the greatest circulatory emergency.

Before giving the pharmacologic results, it may be well to give the pathologic findings, as in all the hearts the changes were much alike, differing mainly in degree. Macroscopically, the hearts were all pale and flabby. In a certain number, small hemorrhages were scattered over the wall externally, especially in the neighborhood of the septum. When cut open, the majority of the hearts showed more or less extensive subendocardial hemorrhages. In many, the left ventricle was almost completely lined by the hemorrhagic areas, while the right ventricle was always less affected. The microscopic changes, as reported by Professor Warthin, consisted of a greater or less degree of Zenker's necrosis with fatty degenerative infiltration, congestion and petechial hemorrhages. In some hearts, the muscle appeared as if cooked. A marked congestion and hemorrhagic condition of the intestinal mucosa was present also in most of the dogs.

Considering now the pharmacologic findings, those dogs which died on the table and which are included in the third group may be considered first. Briefly, it may be said that all therapeutic measures were without avail. As the animals were in such a desperate condition, heroic measures were permissible. The intravenous injection of epinephrin proving ineffective, it was injected through the chest wall into the heart, but this too failed in every case although the chest wall was rhythmically vigorously compressed at the same time. Since in several dogs these measures had proved of no avail, in others in which the heart stopped the thorax was rapidly opened while artificial respiration was being carried on, and epinephrin was injected into the heart in 1 or 2 c.c. doses. Even though in addition the heart was massaged, the only response in such cases was a series of peristaltic waves which passed over the heart and which were followed by ventricular fibrillation.

In one animal after at least fifteen minutes of manipulation, the heart started to beat, but it was slow and weak and stopped entirely in ten minutes. In most of the hearts, the ventricles were in a much worse condition than the auricles, as often the auricles would be found beating with a fair degree of strength and regularity, while all efforts to restore the beat of the ventricles were futile.

Less radical measures than these described were entirely without avail. Those employed were the intravenous injection of digitalis, camphor, physiologic sodium chlorid solution, and solutions of acacia and of glucose, but all failed.

The pharmacologic results with this group of dogs are in striking contrast to those obtained with hearts of normal dogs in which the injection of epinephrin even minutes after the heart had stopped, especially when it is given into the heart and accompanied by cardiac massage, is followed by complete recovery.

The dogs in Group 1, which comprised those which were just able to stagger around and which required an anesthetic, were alike in showing marked signs of circulatory failure. In every case the blood pressure was much below the normal, usually being between 40 and 60 mm. of mercury. The pathologic report showed that all of these hearts were badly diseased, but in spite of that the pharmacologic reaction in every case was practically normal.

For example, Dog 7, the heart of which showed marked Zenker's necrosis, congestion, hemorrhages and fatty degenerative infiltration, sustained an increase in blood pressure from 70 mm. to 100 mm. as the result of the administration of 2 c.c. of the tincture of digitalis. A further injection of 2 c.c. raised the pressure to 140 mm. In another dog with a heart showing approximately the same changes as those described above, a similar dose of digitalis raised the pressure from 26 mm. to 60 mm. The results from ouabain, as would be expected, were much the same as those described for digitalis, in one dog raising the pressure from 26 mm. to 34 mm. and in another raising it from 54 mm. to 160 mm. Pituitary preparations also were followed by a good response, in one dog raising the pressure from 50 mm. to 140 mm., the pressure being well sustained. Neither camphor, strychnin nor caffein had any marked effect on the circulation as far as could be seen by blood pressure measurements. The evidences of central nervous stimulations were plainly visible.

The results obtained on this group of dogs showed that even if the hearts were very badly diseased and showed necrosis, congestion, fatty infiltration and hemorrhages, they yet reacted satisfactorily to epinephrin, the digitalis series and the pituitary preparations; that is, to the drugs which would ordinarily be employed in clinical medicine in cases of impending failure of the circulation.

The intermediate group of animals furnished some interesting results. These animals had a blood pressure of about 5 or 10 mm. of mercury and were in imminent danger of death. It was very noticeable during the operation necessitated by the insertion of the cannulas that the tissues were very dry and that the vessels were comparatively empty. Even the carotid contained so little blood at times that, to judge by the color alone, it would have been impossible to distinguish it from the vagus. On account of this apparent lack of circulating fluid, we directed our attention to supplying this want by using warm (45 C.) Ringer's solution, 6 per cent. acacia solution and finally 10 per cent. glucose solution.

The results from the saline solution were very unsatisfactory. If the solution was run into a vein from a buret, the effect of the increased fluid on the pressure was practically nil. In some experiments it was thrown into the circulation rapidly by means of a large syringe, and in these cases the pressure was raised very considerably; but as soon as the injection was stopped the pressure fell as rapidly as it had risen. No permanent or sustained increase was obtained.

With the 6 per cent. acacia solution, the results were slightly different but scarcely more favorable. In one dog which had suffered from severe hemorrhages, 100 c.c. of acacia solution was given but even during the infusion the blood pressure decreased, falling from 30 mm. to 26 mm. of mercury.

In another dog which was comatose and in bad condition as the result of marked hemorrhages, 50 c.c. of the acacia solution had little effect, raising the pressure merely from 12 mm. to 16 mm. Possibly a further experience with acacia, perhaps under different conditions, might modify our views; but in general our experience in these experiments with it has been distinctly disappointing.

With glucose, however, the results were very favorable. From experience, we found that if we could only get glucose solution (10 per cent.) into the circulation before the heart stopped, no matter in how bad a condition the dog was at the time, we could invariably save the animal for further experimental work. If the solution heated to about 45 C. was allowed to run into a vein, the effects were seen after about 25 c.c. was introduced. The great change was in the increasing strength of the heart, the pulse waves becoming stronger and stronger until they compared favorably with those produced by a normal heart. In some animals, the general blood pressure was not increased greatly, but in others this effect too was quite satisfactory. The favorable effect of the glucose, for instance, was seen in Dog 20, in which 200 c.c. of 10 per cent. glucose raised the pressure from 16 mm. to 28 mm., greatly strengthening the heart. In Dog 21, which was in as bad a condition as any animal we succeeded in saving, 175 c.c. of the glucose solution raised the pressure from 10 mm. to 50 mm. The pressure was well sustained and the heart greatly strengthened. Following the use of digitalis, 100 c.c. more of the solution raised the pressure again from 70 mm. to 84 mm.

The beneficial results from the use of glucose are probably largely to be explained by its nutritive value. A 10 per cent. solution, of course, is hypertonic and would tend to draw fluid from the tissues and thus further add to the volume of the blood; but as the results are so superior to those obtained from the use of acacia, it would probably be true that its main value is due to the fact that, in addition to the solution adding bulk to the blood, it also serves as a source of energy to the heart.

The effect of the other drugs used on these dying dogs was in general characteristic of the drugs employed. Epinephrin brought forth a good response, especially if the rise was expressed on the percentage basis. The actual increase, when expressed in millimeters, was often not great and quantitatively was considerably below normal. For example, Dog 4, with a heart showing extensive Zenker's necrosis, leukocytic infiltration and large hemorrhages under the endocardium, had a blood pressure of 10 mm., which was raised to 55 mm. by 3 minims (0.18 c.c.) of a 1:1,000 epinephrin solution. Dog 10, in much the same condition as Dog 4, was given a like dose of epinephrin, which raised the pressure from 10 mm. to 36 mm. Dog 14 was in bad condition and near death. Its blood pressure of 20 mm. was raised by 2 minims (0.12 c.c.) of epinephrin solution to 120 mm. The heart showed microscopically only slight necrosis and slight fatty degenerative changes. The heart of Dog 11 had stopped earlier, but under massage it started again with a slow but fairly regular beat. At this time, with a blood pressure of 5 mm., epinephrin even in a dose of 1 c.c. of the solution had no effect. Later, after a saline infusion, a second dose of epinephrin was given, this time 1 c.c. being injected into the heart; but, while the percentage increase was fairly satisfactory, the actual increase in millimeters was trivial, being from 6 mm. to 20 mm. In general, then, the results obtained with epinephrin, when it was given to a dog even in imminent danger of death and with a heart badly diseased but still beating, were satisfactory. On the other hand, if the heart had stopped and through massage and other procedures it had been started again, the results of epinephrin administration were not good.

The effect of digitalis administration was much the same as epinephrin. If the pressure was at a very low point (5 or 10 mm.) and the dog practically moribund, then digitalis had little or no effect. If the pressure was higher (from 20 to 30 mm.), then digitalis in 2 or 3 c.c. doses of the tincture raised the pressure about 50 per cent. For example, Dog 14, with a pressure of 20 mm., was given 2 c.c. of the tincture, and the pressure rose to 30 mm. A second 2 c.c. raised it to 45 mm., and a third dose raised it to 65 mm.

If, on the other hand, to some of these dogs which were practically moribund glucose was given first to supply fluid and nourishment, then digitalis gave much better results. Dog 21 was comatose with a pressure of 10 mm. Glucose and acacia raised the pressure to 54 mm., and 3 c.c. of digitalis tincture raised it to 70 mm., certainly a satisfactory response for a dog dying from diphtheria with chronic endocarditis, Zenker's necrosis, fatty degenerative infiltration and numerous hemorrhages into the heart muscle.

The other drug, the administration of which was followed by good results, was pituitary extract. While this was not used primarily in any case in which the animal was in a dying condition, but rather after other measures had first been used, yet the reaction following its use was always quite satisfactory. In Dog 15, a blood pressure of 50 mm. was raised to 140 mm. by a pituitary preparation, the pressure being well sustained. Dog 20, comatose and with no anesthetic and an original blood pressure of 12 mm., sustained an increase in pressure from 30 mm. to 70 mm. following pituitary administration. Dog 21, also comatose, with an original pressure of 10 mm., had its pressure raised by pituitary from 40 mm. to 100 mm.

This excellent showing may perhaps be explained partially by the fact that the increase in pressure is not due to an action of pituitary extract on the heart, but is of peripheral origin and the arterioles are evidently capable of contracting vigorously. The results, even when these facts are taken into consideration, show plainly that under certain conditions these diseased hearts are still capable of maintaining a very satisfactory pressure.

An interesting fact observed during the course of the experiments was that the hearts of these dogs were much more susceptible to digitalis than are the hearts of normal dogs. In these animals, doses of 2 c.c. were sufficient to produce good results and in some of the animals this dose caused distinct toxic symptoms, such as very marked vagus slowing. In some, the heart showed marked irregularity following the injection of a total of 4 c.c., and death followed a total of 6 or 8 c.c. This peculiar susceptibility to digitalis was shown by all the animals in which it was used successfully. The light anesthesia employed, or its complete absence, doubtless would furnish a partial explanation for the marked response from the vagus center, but in addition to the vagus effect, it appears as if the diseased condition of the heart muscle must render it more susceptible to the digitalis glucosids.

CONCLUSIONS

The results of these experiments would seem to show the importance of the early treatment of the circulatory failure that occurs in diphtheria. The earlier the remedial measures are instituted, the better the results are likely to be. However, even late in the course of the circulatory collapse, the so-called cardiac stimulants still produce their normal pharmacologic response. Only after the diphtheritic heart had actually stopped did they fail to bring about beneficial results.

If the circulatory failure has not extended too far, digitalis and pituitary preparations act well, while if the circulatory collapse has become extreme, an intravenous injection of warm 10 per cent. glucose solution given before any drugs are used is likely to be followed by favorable results. In many cases, the glucose was practically life saving. In our experiments, if we could get the solution into the veins before the heart stopped, we were certain to save the life of the dog. These dogs would then live for hours and serve for the investigation of the effects of the various drugs used in similar conditions.

From the pharmacologic standpoint, the time element seemed to be the most important factor in determining the success of the measures used. The earlier treatment was instituted, the greater was the prospect of success. In expressing this view it must of course be understood that we do not ignore or belittle the effect of the pathologic changes in the heart on the action of the drugs. However, it was impossible to appraise exactly the extent of the influence of these changes, as some of the hearts which showed the most marked necrosis and fatty change were resuscitated, while others not so greatly affected ceased to beat and could not be revived.

SPECIMEN PROTOCOL—ABBREVIATED

Dog 21.
4/5/25: 0.1 c.c. diphtheria toxin subcutaneously.
4/7/25: 0.1 c.c. diphtheria toxin subcutaneously.
4/8/25: Dog quiet but responds when spoken to.
4/9/25: 9:00 a. m., quiet.
11:00 a. m., weak, but responds.
1:30 p. m., comatose; no response to call or to being handled. No anesthetic necessary for insertion of cannulas. Animal in worse condition than any which have been previously used. Animal straightened out as though dying and ceased to breathe. Artificial respiration started, but dog started breathing again. Carotid artery practically empty. Mercury manometer showed feeble pulse with a pressure of 10 mm.
2:09, B. P., 10 mm.; 175 c.c. 10 per cent. glucose solution, 45 C., intravenously.
2:18, B. P., 50 mm.; heart much stronger.
2:18-2:30, 100 c.c. 6 per cent. acacia, 45 C. B. P. not changed.
2:31, 4 mm. 1:1,000 epinephrin solution. B. P. raised from 50 mm. to 110 mm.
2:37, pituitary extract, small dose. B. P. raised from 50 mm. to 100 mm. and well sustained.
2:45, B. P., 60 mm.; 3 c.c. tincture digitalis. B. P. raised to 75 mm. Heart became very irregular. Vomiting of blood.
2:48-2:56, 200 c.c. glucose solution raised B. P. to 90 mm.
3:00, 1 mg. strychnin, no apparent effect.
3:15, pituitary raised B. P. 70 mm. Eye reflex good. Heart still irregular.
3:30, heart had become slower and finally stopped.

The heart showed a few hemorrhages under the pericardium and also a few in the right ventricle under the endocardium. The cavity of the left ventricle was almost completely surrounded by hemorrhages under the endocardium. There were hemorrhages over the surface of the stomach, and the intestine was full of fluid blood. The microscopic findings reported by Professor Warthin consisted of an old chronic endocarditis, some atrophy of the heart muscle, moderate Zenker's necrosis, fatty degenerative infiltration in the papillary muscles, and numerous hemorrhages under the endocardium and the epicardium.

COMMENT

This protocol, which is typical of others, illustrates the general course of the action of the diphtheria toxin in dogs. It shows also that, even with a severely poisoned heart and almost complete circulatory collapse, glucose will bring about a very satisfactory increase in blood pressure and that epinephrin, digitalis and pituitary also are very efficient. Digitalis proves to be quite toxic, while a relatively large dose of epinephrin does not produce a very great increase in blood pressure. Acacia and strychnin apparently are without effect.

Thoracoplasty and Pneumothorax.—The results of a good thoracoplasty in properly selected cases show approximately the same percentage of recovery as a satisfactory pneumothorax, or about 40 per cent. clinical recoveries, 30 per cent. improvement and 30 per cent. early and late deaths. Some thoracoplastic surgeons, as Sauerbruch, have gone so far as to consider a thoracoplasty a more valuable operation than a pneumothorax. It is true that a thoracoplastic collapse has an advantage over a pneumothorax in that it is unchanging, whereas in a pneumothorax the degree of collapse or compression changes with gas introduction and absorption, or as a result of an obliterative pneumothorax the lung expands in spite of efforts to keep it collapsed.—Matson, Matson and Bisaillon.

OSTEOMYELITIS OF THE MANDIBLE *

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The presentation of this paper is made with the thought of possibly aiding in a better understanding of osteomyelitis of the mandible through a full discussion by members of this section. The disease is one that should interest not only the surgeon, but also the physician and dentist. All three practitioners have opportunity to observe and study this destructive and not infrequently fatal disease. The family physician and the family dentist are, by virtue of their intimate relationship to the patient, in a position to recognize symptoms of osteomyelitis developing in the mandible, and can frequently institute efficient treatment for its arrest. Yet, how often is the disease permitted to establish itself before adequate measures are taken to bring about its control. General diseases, such as scarlet fever or measles, may so interfere with the nourishment of the jaw as to permit the entrance of pus-producing organisms. Tuberculosis and syphilis may play their part in predisposing to the disease. Certain manufacturing pursuits may cause the disease, either by direct action, or by so lowering tissue resistance as to permit pyogenic bacteria to gain an entrance. Phosphorus necrosis has been eliminated to a great extent since legislation and improved hygienic measures in the industries have been instituted. Neglected or inadequately treated dental infections are by far the most common causes of this disease. Failure to establish early and adequate drainage in cases of acute alveolar abscess, or the application of external heat in the form of hot water bottles, electric pads, or poultices, in these cases, is a frequent cause of peridental infection spreading throughout the mandible, and at times into the soft tissues. Why patients suffering from acute dental infections should have their faces smeared with applications of ichthyol and poultices is beyond my comprehension.

Let us consider, for a moment, the structure of a child's mandible during the years of dentition. The partly formed permanent teeth are lying within their individual crypts, which in turn are within the body of the mandible, adjacent to one another, and in close approximation to the roots of the teeth already erupted. Infection of an erupted tooth can readily pass through the root end, or by means of the peridental membrane into the body of the mandible, and enter the crypts just mentioned. Spreading, from one crypt to another, and on throughout the cancellated structure is not difficult, and soon the entire half of the mandible is involved.

In the young child, an abscessed deciduous tooth should be extracted immediately. Acute infections of permanent teeth, in my opinion, should receive like treatment. It is seldom, if ever, that a tooth in the acute stage of abscess cannot be extracted with safety. While it is true that extraction of the offending tooth does not always arrest infection, and other means have to be instituted to establish proper drainage, the chances are that the patient would be worse off with the abscessed tooth still in position than without it.

Nearly every case of osteomyelitis coming under my care or observation has given a definite history of external heat having been applied when the face or jaw became swollen. Frequently, in cases which we have received early and in which extraction of the abscessed tooth has been done, followed by the application of ice to the mandible, the progress of the disease has nearly always been arrested. When pus is confined in or about the jaws, and external excision has not been made, the use of external heat or poultices is, to my mind, a dangerous practice. The use of external heat tends too frequently to draw infection into regions not desired.

Carrying of infection into deep structures by means of injections made for the purpose of producing anesthesia has been observed rather frequently. The mandibular injection, while a most valuable method of anesthetization where indicated, may be the means of depositing infection in or about the mandibular sulcus. Several cases of this nature have been observed. Evidently, osteomyelitis was secondary to infection placed at the mandibular sulcus, and had traveled into the body of the mandible by means of the canal.

Peritonsillar abscesses are not uncommon where the hypodermic needle has passed through swollen and infected retromolar tissues.

Within the last few years I believe there has been entirely too much unnecessary dental surgery done, where ordinary skilful extraction of teeth would suffice. Teeth extracted for the purpose of relieving pain or foci do not necessarily require curettement of the sockets. The term curettement as applied to the surgical removal of periapical granuloma does not seem to be the most descriptive: enucleation of the periapical sac is more appropriate, I believe. The majority of periapically infected teeth do not require anything further than clean extraction. When the periapical area is large, and simple extraction of the tooth is thought insufficient as a means of eradication, a flap of gum tissue turned back and the granuloma or cyst enucleated, after it has been thoroughly exposed to view, is good practice. But to attempt curettement through the socket of the extracted tooth appears to me not only questionable but totally inadequate. The apical contents, by such a procedure, are usually thoroughly macerated with the normal blood clot and remain in the socket, thereby creating an excellent culture tube. Cases of an alarming nature are constantly occurring following this form of treatment. The bone curet in the hands of an unskilled operator is a dangerous instrument, especially so when that operator feels called on to curet all sockets after extraction, whether the case is an acute alveolar abscess or not. Many cases of osteomyelitis are the result of this form of treatment. It is a wise man who knows when he has done enough.

So much for the osteomyelitis occurring from neglected or improperly treated dental cases. One must not overlook, however, the possibility of this disease manifesting itself through other channels, such as infection entering the blood by way of the tonsils, or through the respiratory or the genito-urinary mucous membranes. In some of these cases, chilling of the body or a strain or contusion of the part may precede the outbreak of symptoms.

The early recognition of this disease is most important. Too much reliance on the absence of roentgenographic findings in the early stages of the disease is to be avoided. One must be guided by the clinical findings, and establish drainage of the affected area, either by extraction of an abscessed tooth or, when necessary, of the cancellated structure itself. Every attempt should be made to conserve the contour of the mandible wherever possible. In early cases of the disease, intra-oral drainage will frequently accomplish the desired result.

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* Read before the Section on Stomatology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

When the bone presents on exposure a "battleship gray" or "black grayish" appearance, and the patient is markedly toxic, I believe resection of the part most advisable. By obtaining the aid of an orthodontist, deformity of the jaw can be avoided to a great extent. Every attempt, of course, is made to preserve the periosteum, and return it to its natural position as nearly as possible. In the more chronic forms of the disease, the roentgenogram is an aid in determining when sequestration has occurred, and one can be governed thereby as to operating.

ABSTRACT OF DISCUSSION

Dr. Robert H. Ivy, Philadelphia: Development of osteomyelitis of the jaws is often dependent on lack of cooperation, procrastination, or misdirected treatment on the part of the family physician and the dentist. Often, in children, too litte importance is attached to proper conservation of the deciduous teeth and of the first permanent molars. The dentist is often placed in a quandary in facing these cases. If he extracts the tooth and osteomyelitis develops, he is liable to be blamed for the trouble; if he does not extract the tooth and the process continues, the blame is likewise liable to fall on him. While, as a general rule, it may be said that the abscessed tooth should be extracted, there is in the individual case an opportunity for the exercise of judgment as to just when to remove it. I am not prepared to accept the dogmatic statement that acutely abscessed teeth should be extracted immediately in all cases. The principal point is to establish drainage early by an incision through the periosteum, either in the mouth, if possible, or, if the drainage can be better accomplished, by external incision. If the case is in the fulminating stage, before frank suppuration has started, extraction of the tooth may do harm in spreading the infection. If, however, pus is seen welling up around the tooth, or if there is a distinct collection beneath the surface, drainage may be greatly aided by extraction of the tooth. After the acute stage is over and it is evident that a certain amount of necrosis is going to occur, waiting for the natural separation of sequestrums brings by far better end-results than radical removal of the diseased bone. By attending to proper drainage and cleansing by irrigation and by removing sequestrums as they form, it is possible to have the lost bone almost completely replaced by new bone, with avoidance of great deformity and interference with function. On the other hand, if the diseased bone is resected before complete sequestration, there is generally great interference with regeneration, resulting in unsightly distortion of the face, malocclusion of the teeth, or nonunion of the remaining portions of the bone.

Dr. M. I. Schamberg, New York: The paper is an absolute conviction of the methods that have been in vogue for many years by practitioners both in dentistry and in medicine when heat or poulticing has been suggested for the relief of pains about the face during the incipient stages of infection. Very often, when a patient suffers from a suppurative condition in other portions of the body, the possibility of bringing the infection to the surface by means of poulticing is warranted; but in and about the jaws the possibility of spreading infection is so apparent and clinically so often found to be highly destructive, that this paper will bear the message that it is an exceedingly dangerous practice. I was glad, also, to hear Dr. Ivy's discussion on the advisability of extraction in acute infections about the mouth, for there is at times a need for proper discrimination. Certain cases only are benefited by the removal of the tooth, even in the acute stage. At the same time an incision is made down to and through the periosteum, when there has been any evidence of thickening, so as to create a vent for the drainage of any collection of pus that may take place at that point. I have frequently seen cases in which the removal of the tooth has been like stirring up a hornets' nest, permitting the infection to spread; but if these cases are surgically watched and treated that may be avoided. I take some slight exception to Dr. Cameron's remarks on the curettement of the infected area. I believe that every extraction in an infection of the mouth is a surgical case. No one would leave a bone wound in any other portion of the body exposed to the filth that is ordinarily found within the mouth, and under no circumstances do I believe in having any case treated without some type of surgical treatment when there has been infection about the mouth or teeth. I agree that there should not be a blind curettement or churning or stirring up of infection. The granulomatous mass should be enucleated and the wound should be protected, not necessarily drained, if there is no free pus there to drain. It should not be drained of pus that does not exist, but it should be dressed and protected against the invasion of organisms, because they travel very quickly through the cancellous structure of the bone.

Dr. E. G. Ramsdell, New York: I wish Dr. Cameron would say a word about the management of cases of chronic osteomyelitis. I am thinking of two patients, one a girl of 18 who has had a cavity in the mandible for eight years. Her acute infection occurred eight years ago. It was taken care of at the time, and, five years ago, while in Europe she was operated on with an external incision, and the cavity was again drained and curetted. One year ago she had an operation from within the mouth. At present, a cavity about the size of a ten-cent piece is still in the mandible, with a dense wall of protective bone about it. Once in four or five weeks her jaw swells, and she has a good deal of pain. The swelling seems to subside spontaneously with a slight discharge from some small sinus on the inside of her mouth. The other case is that of a woman with a history of a similar process of fifteen years' duration.

Dr. Douglas Parker, New York: I should like to reiterate what Dr. Schamberg said in regard to curettage. I believe that the curet is a very dangerous instrument in the hands of the uninitiated in cases of acute infection in the dental area. We can accomplish a great deal more by the use of firm packing, which will cause a sloughing off of the diseased tissue. I do not think that enucleation of a so-called granuloma is possible without spreading the infection in the acute cases. In the chronic cases curettage is valuable and should be utilized, but we must differentiate between acute cases and chronic cases. I would take exception to the "battleship gray" appearance of the bone, which Dr. Cameron mentioned. He spoke of the resection of the mandible. Too much surgery in these cases of acute osteomyelitis is uncalled for. Thorough opening up of the soft tissues, whether this is done within the mouth or externally, is sufficient. We should allow the bone that has lost its circulation to be thrown off naturally, rather than to resect the mandible radically.

Dr. James R. Cameron, Philadelphia: As near as I can gather from the statement of the facts in the chronic osteomyelitis case, some place in that mandible there is a pocket of infection that has not been cleaned out or drained long enough. If the roentgen ray does not show such a pocket, in a case that has been active for eight years, it is justifiable to open the mandible wide in that region and to keep it opened and thoroughly drained. I can illustrate what I have in mind by referring to a case in which I saw a general surgeon operate, an osteomyelitis of the tibia. This patient had been operated on in four different hospitals in Philadelphia for subperiosteal abscess. He was admitted to the Pennsylvania Hospital with that diagnosis for the fifth time. I saw Dr. Gibbon evacuate the pus from beneath the periosteum. The bone was healthy looking, the surface being apparently normal. The roentgenogram revealed nothing abnormal. Dr. Gibbon said: "A subperiosteal abscess is always secondary to something else; there is something causing it. This man has been in the hands of four good surgeons in Philadelphia, and he still has this trouble. I feel that I am justified in opening up this apparently good bone to see what I find." He did open it, and after a tedious exploration, he found a well of granulation tissue in the upper part leading down to a small opening where the subperiosteal abscess had occurred. Dr. Parker mentioned the "battleship gray" appearance of bone. Probably I did not make myself clear regarding that. The point that I tried to bring out was that in cases in which the bone is opened up and one finds that grayish-black appearance, saturated with pus, plus pathologic fractures, and the bone a definite sequestrum, one is justified in lifting it out. If it is left alone, it has been my experience that the patient becomes worse. In cases in which we have lifted that bone out, we have established good drainage, preserved the periosteum, regeneration has taken place, and the patient has recovered much sooner than if we had tried to retain the dead bone as a splint. I certainly would not use hot applications to the face swollen after extraction. I would try applications of ice, and if that does not give relief, after a short time one will find a definite area of fluctuation, and if that is incised and drained, relief will result.

DRAINAGE OF THE PAROTID GLAND

AN OPERATION IN CASE OF INJURY TO STENSON'S DUCT

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There are two ways in which obstruction commonly occurs to the flow into the buccal cavity from the parotid gland. The first is the growth, in the lumen of Stenson's duct, of a small stone that forms occasionally and lodges, more or less completely inhibiting the egress of parotid secretion. The second is the traumatic severing or inflammatory occlusion of the duct through which the saliva passes, keeping the secretion from finding an exit. The result in either case is the same. The parotid gland may be swollen to twice or three times its normal size by the accumulation of saliva, the secretion continuing to form and stretching the gland.

The method of cure is to reestablish the flow from the parotid into the mouth. In the case of a stone, it can generally be removed with no harm either to the duct or to the gland, and the flow immediately starts again. If the duct is cut, healing occurs with scar tissue formation, making a complete obstruction. A complete occlusion may take place from an inflammatory process, and the problem then is to provide a new canal or rebuild the old one. If a probe is placed in the canal and an opening made, it will close again in a short time. A canal must be formed, lined with mucosa, that will adequately drain and not contract shut in a short time with fibrous tissue.

I have used the following method of making a permanent canal in two cases with perfect results:

The internal opening is found, if possible, and a small incision made along Stenson's duct well into the gland. A very thin strip of lead, three-eighths inch wide and 2 inches long, is twisted with about three turns to the inch. This lead has a small hole in one end, through which a linen suture is passed and tied in the middle. The incision made along the duct is extended well into the gland, and one end of the lead strip is passed into it. A needle on each end of the linen suture is passed through the gland, out through the skin and out the cheek, the needles being about an eighth of an inch from each other. The ends of the suture are tied together, holding the lead in place. The saliva immediately begins to drain, and mucosa grows along the sinus to form a permanent fistula. The turns in the lead are sufficient to allow the saliva to flow easily and make the shape of the sinus. The lead is left in situ for four weeks, and then the suture is cut on the cheek and the strip removed. While the lead is in place, the inner end is flattened out against the mucous membrane and is not uncomfortable to the patient.

In these two cases, the results have been so good that I consider this method worth while reporting.

SODIUM THIOSULPHATE IN TREATMENT OF METALLIC INTOXICATION

REPORT OF CASES *

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The favorable influence of sodium thiosulphate on the toxic effects produced by the administration of arsenical, mercurial or lead compounds has been definitely shown by Ravaut,[1] McBride and Dennie,[2] Hoffmann and Schreus[3] and others.[4] Their reports deal especially with the after-effects of the arsphenamins in regard to arsenical rash, dermatitis, jaundice and intoxications. Clinical and pathologic findings demonstrate that intoxication with arsenic, mercury, lead and other metallic compounds produces irritation of the skin, liver and kidneys. If this irritation continues over a long period of time, degenerative changes will result. The fact that the skin is usually first affected in postarsphenamin reactions, and secondarily the liver or kidneys, may be due to a disturbed physiologic action of the skin. The function of the skin and its relationship to the autonomic nervous system has been discussed in the interesting studies by Mueller.[5] The different stages from mild to very marked idiosyncrasy displayed against these metallic poisons after external, oral or intravenous application can be explained, according to Mueller, by the disturbed balance of the autonomic nervous system of certain individuals. In every toxic reaction after the application of the foregoing metals they can be found in the blood, in the excretions of the kidneys or feces and, in the case of arsenic at least, in the skin (scales) also. If the toxic influences are of short duration, the skin shows clinical symptoms ranging from a mild rash or erythema to a severe dermatitis exfoliativa. These cases generally have a favorable prognosis, although in severe dermatitis exfoliativa the mortality is 20 per cent. Therefore, to avoid pathologic degenerations of the tissues, therapy should be instituted early. The best treatment known at present is the intravenous administration of sodium thiosulphate, by means of which the toxic action of the circulating or deposited metallic substances may be antagonized.

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* The cases reported were in the Wisconsin General Hospital, University of Wisconsin

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[2] McBride, W. L., and Dennie, C. C.: Treatment of Arsphenamin Dermatitis and Certain Other Metallic Poisons, Arch. Dermat. & Syph. **7:** 63 (Jan.) 1923. Dennie, C. C., and McBride, W. L.: Treatment of Arsphenamin Dermatitis, Mercurial Poisoning, and Lead Intoxication, J. A. M. A. **83:** 2082 (Dec. 27) 1924.

[3] Hoffmann, E., and Schreus, H. T.: Sodium Thiosulphate as a Remedial Agent for Salvarsan and Mercurial Dermatitis, Munchen. med. Wchnschr. **70:** 1481 (Dec. 14) 1923.

[4] Semon, H. C.: An Antidote for Arsenic, Bismuth and Mercury Poisoning, Brit. M. J. **1:** 662 (April 12) 1924. Halliday, Hilda M., and Sutherland, C. E.: Ibid. **1:** 407 (Feb. 28) 1925. Fuss, S., and Dahlman, F.: Sodium Thiosulphate Treatment of Arsphenamin Dermatitis, München. med. Wchnschr. **72:** 345 (Feb. 27) 1925.

[5] Mueller, E. F.: Leukozytensturz infolge unspezifischer Intrakutanimpfung, Munchen. med. Wchnschr. **69:** 1506 (Oct. 27) 1922; Die Bedeutung der Haut fur die Insulinwirkung, ibid. **71:** 813 (June 20) 1924. Mueller, E. F., and Myers, C. N.: The Effect on the Involuntary Nervous System of Arsenicals and the Salvarsan Group, Proc. Soc. Exper. Biol. & Med. **21:** 474, 1924. Rosen, I.; Mueller, E. F., and Myers, C. N.: The Relation of Silver Arsphenamin to the Involuntary Nervous System and to the So Called Nitritoid Crisis, Arch. Dermat. & Syph. **10:** 607 (Nov.) 1924. Bucky, G., and Mueller, E. F.: Strahlende Energie, Haut und Autonomes Nervensystem, Munchen. med. Wchnschr. **22:** 883 (May 29) 1925.

METHOD OF ADMINISTRATION

The most promising and effective way of administering sodium thiosulphate is by the intravenous injections of a 5 per cent. solution; 10 c.c. of the solution contains 0.5 gm. of sodium thiosulphate; i. e., 7½ grains. According to the method of treatment advised by McBride and Dennie, 0.3 gm. of sodium thiosulphate is given intravenously; the following day, 0.45 gm.; the third day, 0.6 gm.; the fourth day, 0.9 gm.; the sixth day, 1.2 gm., and the eighth day, 1.8 gm. This is usually sufficient for the cases of arsenical dermatitis. The treatment of the cases reported in this article began with smaller doses and was not increased above 1 gm. We never observed any bad effects after even daily injections of 1 gm. over a period of fourteen days. Usually it is sufficient, even for severe cases of arsenical dermatitis, to give from five to twelve injections. After the first dose, the redness, edema and serous exudate usually began to decrease.

Sometimes it is necessary to give the intravenous injections into the jugular vein, if marked generalized edema with dermatitis prohibits the application in the veins of the extremities. In very edematous cases we used oral administration until the acute swelling passed. In this case we start with an average dose of 2 gm. in from 120 to 200 c.c. of physiologic sodium chlorid solution. Salt solution is used instead of distilled water because it decreases the vomiting,[6] which often occurs after oral sodium thiosulphate medication, and decreases the rate of decomposition of the thiosulphate in the stomach. The dose of 2 gm. may be increased to 10 gm. without after-effects, excepting a slight diarrhea. As mentioned above, the oral method, especially in higher doses, is often interfered with by vomiting, beginning shortly after each application. We find it advisable to start oral administration with 2 gm. in from 120 to 150 c.c. of physiologic sodium chlorid solution, given in the morning and late in the afternoon. Rectal and vaginal administration has not been used by us.

METHOD OF DETERMINING ARSENIC

The twenty-four hour collection of urine is thoroughly mixed and a portion withdrawn for the determination of the arsenic content. One hundred cubic centimeters of urine is digested in an 800 c.c. Kjeldahl flask in 20 c.c. of concentrated sulphuric acid, to which is added from 5 to 10 c.c. of concentrated nitric acid, 5 gm. of potassium sulphate, and a small crystal of copper sulphate. When the digestion is completed, any remaining nitrogen oxids are removed by adding 25 c.c. of a saturated solution of ammonium oxalate and heating. The pentavalent arsenic is reduced to the trivalent state by either sulphur dioxid or stannous chlorid. The digest is then diluted with distilled water to exactly 100 c.c. at 20 C. The arsenic is determined in duplicate samples of this solution by the Gutzeit method. The reagents used are practically arsenic free, and frequent control determinations are made, using arsenic free urine.

The same method is used in determining the arsenic content of the scale in the cases of dermatitis exfoliativa. Scales are collected from different portions of the body and mixed in about equal proportions. From 1 to 3 gm. is digested, the same procedure being used as outlined above. The results for both are calculated for the arsenous oxid.

DERMATITIS EXFOLIATIVA

Under the head of dermatitis exfoliativa we have included all cases showing a skin rash. Ten cases have been observed mostly during the first stage of eruption. The onset began with an edema and redness around the eyes, neck and upper part of the chest. Since there was marked uniformity of the clinical symptoms, and since all the patients had received two or three neo-arsphenamin injections, only two histories are reported.

CASE 1.—A man, aged 20, contracted syphilis. Treatment with mercury and neo-arsphenamin began, Jan. 10, 1924, during the secondary stage with roseola, mucous patches and papules. Twenty-four hours after the second injection of 0.6 gm. of neo-arsphenamin, January 24, the patient developed a rash which was most prominent around the upper eyelids and on the lower part of the neck, with marked itching. The urine contained albumin. Sodium thiosulphate, 0.5 gm., was given intravenously. January 25, there was a marked decrease of the redness, and the itching had ceased. January 26, the urine was free of albumin, and the rash was less pronounced. Sodium thiosulphate, 1 gm., was given intravenously. January 29, there was scaling around the eyelids and neck; the urine was normal. Sodium thiosulphate, 1.5 gm., was given intravenously. January 31, there were no clinical symptoms excepting slight redness of the previously affected portions of the skin.

TABLE 1 (Case 2).—*Arsenic Excretion in Urine and Scales*

24 Hours Ending 6 a. m.	Total Volume Urine Excreted, C. c.	Total Arsenous Oxid Excreted in 24 Hours, Mg.	Comment
4/ 2/25	880	2.4	8.3 mg. arsenous oxid per 100 gm. scale
4/ 3/25	850	1.8	
4/ 4/25	985	2.5	2 gm. sodium thiosulphate by mouth
4/ 5/25	845	2.54	2 gm. sodium thiosulphate by mouth
4/ 6/25	550	4.7	
4/ 7/25	745	1.6	4 mg. arsenous oxid per 100 gm. scale; 4 gm. sodium thiosulphate by mouth, part lost emesis
4/ 8/25	750	2.1	2 gm. sodium thiosulphate by mouth
4/ 9/25	700	1.6	2 gm. sodium thiosulphate by mouth
4/10/25	710	2.6	2 gm. sodium thiosulphate by mouth
4/11/25	1,000	6.0	2 gm. sodium thiosulphate by mouth
4/12/25	655	4.9	2 gm. sodium thiosulphate by mouth
4/13/25	555	3.3	2.2 mg. arsenous oxid per 100 gm. scale; 2 gm. sodium thiosulphate by mouth
4/14/25	170	8.5	2 gm. sodium thiosulphate by mouth, 200 c.c. urine lost
4/15/25	750	4.8	
4/16/25	800	2.24	
4/17/25	810	2.26	
4/18/25	1,330	1.59	
4/19/25	1,155	1.45	
4/20/25	1,260	2.76	2.4 mg. arsenous oxid per 100 gm. scale
4/21/25	1,015	1.1	
4/22/25	Lost		
4/23/25	Lost		
4/24/25	Lost		
4/25/25	Lost		
4/26/25	515	1.65	
4/27/25	600	1.02	
4/28/25	950	0.58	1 mg. arsenous oxid per 100 gm. scale
4/29/25	660	0.23	
5/ 4/25			1.2 mg. arsenous oxid per 100 gm. scale
5/ 7/25	730	0.28	
5/ 8/25	Lost		0.5 gm. sodium thiosulphate intravenously
5/ 9/25	400	0.46	
5/10/25	200	0.06	0.5 gm. sodium thiosulphate intravenously
5/11/25	790	0.87	0.74 mg. arsenous oxid per 100 gm. scale
5/12/25	Lost		
5/13/25	550	0.11	

Following this, mercuric salicylate was the only antisyphilitic medicament employed until April 10, when combined mercuric salicylate and neo-arsphenamin treatment was begun, during which the arsphenamin dose never exceeded 0.45 gm. No further untoward effects occurred. The patient has received, to the present, five courses of combined treatment and has had no signs of skin irritation.

CASE 2 (courtesy of Dr. R. L. McIntosh).—L. C., a girl, aged 16, who had secondary syphilis, developed a severe exfoliativa arsenical dermatitis after the fourth injection of 0.6 gm. of neo-arsphenamin. Owing to the pronounced general edema, attempts to give sodium thiosulphate intravenously were not very successful, and most of the treatment was given by mouth. The arsenic excretion was followed both in the urine and in the scales. The results are given in Table 1 and Chart 1. In this case the excretion of arsenic was definitely increased after the administration of sodium thiosulphate. The arsenic content of the scales decreased steadily, but this, perhaps, cannot be attributed to the thiosulphate treatment.

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[6] Lehmann, E. P., and Gibson, H. V. A Simple Immediate Treatment for Vomiting, J. A. M. A. 84:1259 (April 25) 1925.

JAUNDICE AFTER NEO-ARSPHENAMIN INJECTIONS

Cases in this group were in the latent stage of syphilitic infection when treatment began. After the third and fourth injection of neo-arsphenamin the patients developed jaundice of the sclera of the eyes and skin. The urine was brownish and gave a positive test for bilirubin. They received from 0.25 to 0.5 gm. of sodium thiosulphate intravenously. Under this treatment and a fat-free diet the clinical findings cleared up rapidly. The further treatment consisted of mercury rubs only, and there were no further skin manifestations.

Case 3.—G. S., a youth, aged 18, committed to the hospital, Oct. 20, 1924, with the diagnosis of syphilitic iritis on a congenital syphilitic basis, received neo-arsphenamin, October 24, and 31. The next day the patient complained of headaches, vertigo and nausea, and developed a slight jaundice. November 12, he received 0.5 gm. of sodium thiosulphate, after which the subjective complaints became less. After the injection of sodium thiosulphate, the icterus faded and the patient felt well. The arsenic excretion was not followed in this case.

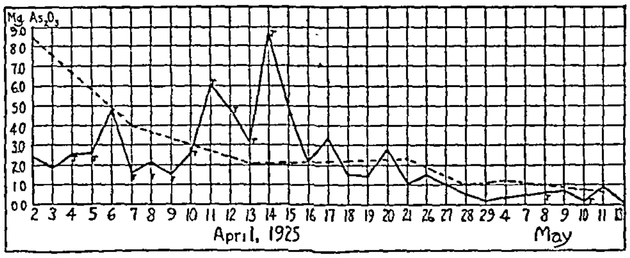

Chart 1.—Excretion of arsenic in urine and skin before and after sodium thiosulphate treatment in severe exfoliative arsphenamin dermatitis (Case 2). *T*, given sodium thiosulphate; broken line, arsenous oxid in 100 gm. scales; solid line, arsenous oxid in twenty-four hour urine.

Case 4.—R. M., a youth, aged 19, with congenital syphilis, developed a severe jaundice with nausea, vomiting and headaches, during treatment with neo-arsphenamin. He received a total of five doses intravenously of sodium thiosulphate, each dose consisting of 0.25 gm., over a period of eleven days. The jaundice faded rapidly, and the general conditions improved practically from the first treatment with the thiosulphate. The arsenic in the urine was followed for three days before the first dose of thiosulphate. The arsenic excretion rose slightly after the first dose and then decreased to a trace after the next dose of thiosulphate. The urine was analyzed daily for the following ten days and showed only a trace of arsenic.

POLYNEURITIS AFTER ARSENICAL INTOXICATION

Polyneuritis after injections of high doses of arsphenamins has been very rarely observed while, on the other hand, milder forms of nerve irritations resulting in numbness and formication are well known. Widespread arsenical polyneuritis has been reported from England, after the intake of beer that contained arsenic, and from Philadelphia, after the drinking of "moonshine" which had been manufactured in distilleries using lead pipes. The following case is interesting because the clinical findings were those of an alcoholic polyneuritis, while the blood findings, stippling of the erythrocytes, pointed toward a lead intoxication. However, repeated analysis failed to demonstrate lead in the urine; but there was a constant output of arsenic in the urine and feces. The arsenic excretion and the improvement after intravenous sodium thiosulphate injections led to a diagnosis of an arsenical polyneuritis.

Case 5.—Mrs. L. M., aged 35, had healthy children and had suffered no serious diseases. In January, 1924, after having drunk several glasses of "moonshine," she complained of tingling in the finger tips and vomiting. After four days, during which the stomach was washed out several times, these symptoms disappeared. In November, 1924, after a party in which the members drank heavily of "moonshine," the stomach trouble recurred. The patient vomited every morning and felt very weak. These vomiting spells continued and occurred after each meal. She vomited finally twelve times a day. In the first week of December, 1924, there was noted a weakness of the lower extremities, with tingling sensations in the toes. The weakness increased, and the upper extremities became involved. The patient became bedridden, and was unable to use the hands even for personal duties. Further inquiry elicited information of a steady drinking of perhaps from 2 to 4 fluidounces of "moonshine" daily. It was not made at home but was obtained from a nearby distillery in

Table 2 (Case 5).—*Arsenic Excretion in Urine and Scales*

24 Hours Ending 6 a. m.	Total Volume Urine Excreted, C.c.	Total Arsenous Oxid Excreted in 24 Hours, Mg.	Comment
1/15/25	950	0.67	4 p.m. 0.3 gm. sodium thiosulphate intravenously
1/16/25	1,035	0.7	8 a. m. 0.3 gm. sodium thiosulphate intravenously
1/17/25	2,400	1.4	8 a. m. 0.3 gm. sodium thiosulphate intravenously
1/18/25	1,660	0.63	
1/19/25	1,867	11.48	5 p. m. 0.3 gm. sodium thiosulphate intravenously
1/20/25	1,730	0.94	
1/21/25	1,645	0.4	5 p.m. 0.5 gm. sodium thiosulphate intravenously
1/22/25	1,750	0.6	
1/23/25	2,780	0.7	
1/24/25	2,865	1.15	
1/25/25	3,290	0.82	
1/26/25	1,025	0.34	
1/27/25	2,585	0.34	
1/28/25	2,510	1.4	
1/29/25	2,700	0.55	3 p. m. 0.25 gm. sodium thiosulphate intravenously
1/30/25	2,790	2.12	6 p. m. 0.25 gm. sodium thiosulphate intravenously
2/ 1/25	2,020	0.47	
2/ 2/25	2,060	0.2	
2/ 3/25	2,680	0.2	
2/ 4/25	2,500	0.88	
2/ 5/25	1,805	1.35	6 p. m. 0.25 gm. sodium thiosulphate intravenously
2/ 6/25	2,675	3.08	8 p. m. 0.25 gm. sodium thiosulphate intravenously
2/ 7/25	3,025	2.27	8 p. m. 0.25 gm. sodium thiosulphate intravenously
2/ 8/25	2,250	1.86	
2/ 9/25	2,150	0.55	
2/10/25	2,380	0.36	8 p. m. 0.25 gm. sodium thiosulphate intravenously
2/11/25	2,800	4.9	3 p. m. 0.25 gm. sodium thiosulphate intravenously
2/12/25	2,320	0.15	4 p. m. 0.25 gm. sodium thiosulphate intravenously
2/13/25	1,746	0.13	4 p. m. 0.25 gm. sodium thiosulphate intravenously
2/14/25	1,170	Trace	
2/15/25	2,360	0.35	
2/16/25	2,040	0.6	
2/17/25	1,220	0.27	Incomplete sample
2/18/25	2,850	0.57	
2/19/25	1,590	0.48	
2/20/25	2,200	0.11	
2/21/25	1,275	Trace	
2/22/25	1,400	0.14	
2/23/25	1,460	Negative	
2/24/25	1,330	Negative	
2/28/25	875	Trace	
3/12/25	2,200	0.27	
5/21/25	Qual.	Negative	

large tin cans. These cans contained no lead, nor were there any lead pipes in the house.

The attending physician gave the patient eight injections of sodium cacodylate, after which the tingling sensations, the weakness of the hands and feet and the muscle pain on pressure increased.

Examination revealed that the skin and mucous membranes were whitish; there was a slight edema around the eyes and ankles. There was a pronounced wrist-drop on both sides, with atrophy of the muscles of the forearms and hands, as well as of the lower extremities, more pronounced in the foot muscles, with inability to flex or extend toes, feet, legs, fingers, hands or arms. Paralysis was more pronounced in the extensors and abductors. The tendon and superficial reflexes were absent. The deep sensory perception was disturbed in the toes and feet, slightly in the knees, and very pronounced in the fingers and hands. The electric examination gave no reaction with the faradic current in the affected muscles of the feet; it gave a decreased reaction with direct stimulation in the flexors and extensors of the forearms and legs. The reaction of degeneration was noted in the thenar and hypothenar, as well as in the interossei of both hands and also of the gastrocnemius. The urine contained albumin but no casts. Anemia was not very pronounced, while the erythrocytes showed basophilic degeneration. Table 2 and Chart 2 demonstrate the effect of the sodium thiosulphate medication on the arsenic output in the urine.

Under thiosulphate and hydrotherapy the patient improved and was able to use the hands, arms and legs, although the muscles of the feet are still paralyzed. Electrotherapy and massage were applied after the arsenous oxid output had reached a low level over a long period.

ACUTE MERCURY INTOXICATION [7]

CASE 6.—A sailor, aged 37, had been in a very good physical condition. The character of the complaints and behavior of the patient led the physician in charge to a diagnosis of neurasthenia. April 13, 1925, the patient was depressed over some domestic trouble. He obtained several mercuric chlorid tablets, one of which was swallowed. A marked burning in the mouth and throat was produced. About 1:30 p. m., a few hours after swallowing the tablet, the patient was seen by a medical officer, who thought that he was intoxicated. The physician was not aware of the fact that mercuric chlorid had been taken, but he prescribed 1/40 grain (1.6 mg.) of apomorphin. About 2 o'clock the medical officer was informed of the intended suicide with mercuric chlorid, and the patient received buttermilk and egg-white, which was vomited almost immediately. The man became extremely excited. The pulse rate was 140 a minute. The urine obtained at 3 o'clock showed casts and albumin. During the night the patient vomited several times. None of the vomitus was analyzed for mercury. April 14, the patient showed a dirty, dry tongue, reddened gums, foul breath, marked salivation, abdominal distention and marked general prostration. At 3 p. m., 0.5 gm. of sodium thiosulphate in 10 c.c. of water was given intravenously. The urine contained albumin and red cells. About one hour after this injection, the patient stated that he felt distinctly more comfortable. April 15, the tongue was cleaner, and abdominal distention less; salivation was still present but decreased. The patient felt quite comfortable and looked improved. He passed 1,000 c.c. of urine, which was negative for albumin, red cells or casts. Sodium thiosulphate was given in 0.5 gm. doses at 9 a. m. and 3 p. m. He made an uneventful recovery. No further sodium thiosulphate treatment was given.

This case demonstrates that sodium thiosulphate is effective in early cases of mercury intoxication and prevents also further development of kidney conditions.

ACUTE ARSENICAL POISONING

CASE 7 (courtesy of Dr. W. A. Mowry).—Miss O. L., aged 18, took about a teaspoonful of arsenous oxid, approximately 6 gm., at 1:30 p. m., May 26, 1925, with suicidal intent. The patient stated that the arsenous oxid, which she had taken from a chemical laboratory about a year previously, was crystalline in structure and a little coarser than powdered sugar. She had eaten nothing for five hours prior to taking it. About 2:30 she had some pain in her stomach and was nauseated, but did not vomit. The pain became severe about an hour later, and she vomited. She continued to walk around, and between 4 and 5 p. m., ate some hot milk toast. Following this, there was persistent vomiting and considerable pain. About 6 p. m. she admitted to her roommate that she had taken poison, and she was taken to the hospital immediately, where she was admitted at 6:20.

Lavage was not very successful, because of persistent vomiting. She was given egg albumin, which was retained about ten minutes, and also an enema. Bismuth and codeine were given by mouth, but were expelled in a few minutes. The pulse rate was 130, and the respiration, 24. A digitalis preparation and glucose were given hypodermically. At 8:30 p. m., 0.25 gm. of sodium thiosulphate was given intravenously. At 10 p. m., the pulse rate was 160; nausea was intense; but the pain was not severe. At 11 p. m., 0.5 gm. of sodium thiosulphate was given intravenously. At this time it looked as though the patient would die.

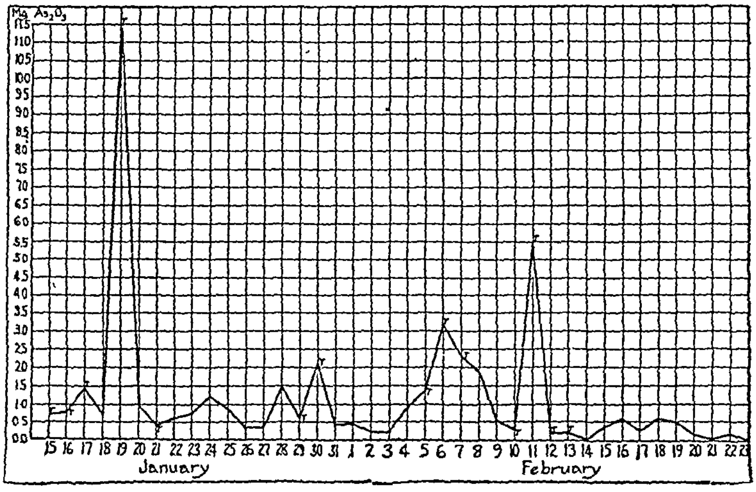

Chart 2.—Excretion of arsenic in urine before and after sodium thiosulphate treatment in arsenical polyneuritis (Case 5).

At 2 a. m., on the 27th, 90 c.c. of urine was removed by catheter and, on analysis, showed 4.5 mg. of arsenous oxid, albumin, acetone, glucose, many casts, and occult blood. An enema at 2:40 a. m., on analysis, yielded 20 mg. of arsenous oxid per hundred cubic centimeters. A sample of vomitus taken a little later contained 1 mg. of arsenous oxid per hundred cubic centimeters.

The patient seemed a little stronger on the 27th; the pulse was not so rapid, and was of better quality. Vomiting was less frequent. A severe headache persisted all day. She was given 0.25 gm. of sodium thiosulphate at 1:30 p. m., and later 0.5 gm., both intravenously. By 8 p. m., she was able to retain 8 gm. of sodium thiosulphate given in albumin water by mouth. Proctoclysis and hypodermoclysis were continued at intervals.

On the 28th, the pulse rate was from 120 to 128, and the patient was fairly comfortable. Voided urine showed 1.8 mg. of arsenous oxid per hundred cubic centimeters, albumin, acetone, many casts, and a trace of occult blood. She received two doses of 0.5 gm. each of sodium thiosulphate intravenously and one of 8 gm. in saline solution by mouth.

On the 29th, a mild stomatitis and conjunctivitis which persisted for a few days developed. The fluid output was 40 per cent of the intake. The urine was highly acid and contained many casts. The patient was given 1.3 gm. of sodium bicarbonate by mouth, three times daily to decrease the acidity of the urine. Two doses each of 0.5 gm. of sodium thiosulphate intravenously and two of 8 gm. each in saline solution by mouth were given. The same treatment was given on the following day. The patient felt comfortable and was able to retain fruit juices and broth. The fluid output was 50 per cent. of the intake, the casts in the urine had decreased markedly, and there was only a trace of albumin. There was no diarrhea.

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[7] Case 6 is presented through the courtesy of Lieut. R. P. Parsons, M. C., U. S. Navy, Great Lakes Naval Hospital.

Beginning on the 31st, and continuing for eight days, the patient was given daily 1 gm. of sodium thiosulphate, intravenously, and two doses of 8 gm. each, by mouth. June 2, the urine showed a trace of albumin and a few casts. The fluid output was practically normal. Both the urine and the feces contained arsenic. The patient was allowed to be up for several hours.

There were no complications and the patient was discharged, June 8, thirteen days after admission. The arsenic output had dropped to about 1.5 mg. in 4 liters of urine.

The usual fatal dose of arsenous oxid is less than 1 gm., while in this case the patient recovered after taking about 6 gm. The conditions for absorption were favorable, as the arsenous oxid was finely powdered and was taken into an empty stomach. Although probably a large portion was removed by vomiting and through the intestinal tract, the amount absorbed, judging from the symptoms and the chemical findings, probably would have been fatal. The rapid recovery and lack of the usual complications, severe stomatitis, jaundice, nephritis and neuritis, must be attributed largely to the sodium thiosulphate treatment.

COMMENT

The administration of sodium thiosulphate was followed in each case by an increase in the excretion of arsenic in the urine. In some cases the increase in the excretion was marked, and in others it was slight. This confirms the observation of Groehl and Myers.[8] The more marked increases were of short duration and could not be maintained by subsequent doses of sodium thiosulphate. The peaks in the rate of excretion were always several days apart, even with daily doses of thiosulphate. This increase may be due in part to the diuresis produced by the sodium thiosulphate, or to the action of the sodium thiosulphate on the arsenic held in combination in the tissues, as suggested by Groehl and Myers. This simple mechanism does not entirely explain all the facts.

One of the most striking effects of this treatment has been the prompt disappearance of albumin and casts from the urine. This occurred despite an increased amount of arsenic in the urine. Apparently the drug has the property of protecting the kidney against damage by arsenic and tends to restore the normal renal function. To confirm this, a series of rabbits was given a lethal dose, intravenously, of sodium arsenite and treated subsequently with sodium thiosulphate. Another series of rabbits was given the same dose of sodium arsenite but no sodium thiosulphate. The pathologic damages in the kidneys were less marked in the treated animals than in those receiving no treatment with thiosulphate. Anuria always occurred in the untreated animals but never in those treated with sodium thiosulphate. The damage produced by the sodium arsenite in the liver and spleen was practically the same in both the treated and the untreated series. Apparently, one function of the sodium thiosulphate is on the rapid restoration of one of the main excretory organs, the kidneys, to normal.

Another factor which may be significant is the possible effect of sodium thiosulphate on intracellular oxidation. It has long been known that arsenic affects metabolism. Voegtlin[9] and his co-workers recently presented evidence as to the chemical nature of the arsenoceptor in the tissue first proposed by Ehrlich. Voegtlin believes this receptor in the tissues to have the general form *R*-SH and agrees with the trend of recent work that this grouping is essential to intracellular oxidation. He states that apparently sodium thiosulphate does not act by replacing the *R*-SH group removed by the arsenical and thus maintaing intracellular oxidation, and he is able to offer no explanation of the mechanism of the action of thiosulphate in protecting against damage by arsenic.

Sodium thiosulphate in the body is oxidized to sodium sulphate,[10] and a molecule of sulphur is liberated. Hottinger[11] has pointed out that sulphur in the body may also play a rôle in biologic oxidation, similar to that of the *R*-SH group.

Further experimental evidence on the chemical and pathologic effect of sodium thiosulphate in the treatment of heavy metal poisoning is being accumulated and will be published in subsequent papers.

SUMMARY

Sodium thiosulphate has been found efficacious in the treatment of arsphenamin dermatitis and jaundice, and in acute arsenical and mercurial poisoning. The treatment increases the excretion of arsenic and hastens the restoration of the kidneys to normal. Saline solution is recommended as the solvent when sodium thiosulphate is given by mouth.

SODIUM THIOSULPHATE IN MERCURIAL POISONING

AN EXPERIMENTAL STUDY *

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AND
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Both experimental and clinical observations indicate that the absorption of mercuric chlorid occurs rapidly after its oral administration. Burmeister and McNally[1] found that large amounts of mercury were present in the blood of a dog within three minutes after a massive dose of mercuric chlorid had been placed in the stomach of the animal; indeed, in this lapse of time, "irreparable kidney parenchyma degenerations" had been produced.[2] Unfortunately, many cases of mercuric chlorid poisoning encountered clinically do not come under treatment for hours after the administration of the poison; consequently, much of the mercury must have gained entrance into the circulation. It is obvious, therefore, that an agent which is capable of neutralizing the poison and hastening its elimination is to be desired.

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[8] Groehl, Marion R., and Myers, C. N.: Sodium Thiosulphate in Treatment of Metallic Intoxication, *Therap. Gaz.* **40:** 691 (Oct. 15) 1924.

[9] Voegtlin, Carl, Dyer, Helen A., and Leonard, C. S.: On the Specificity of the So Called Arsenic Receptor in the Higher Animals, J. Pharmacol. & Exper. Therap. **25:** 297 (May) 1925.

[10] Nyiri, W.: The Fate of Sodium Thiosulphate in the Organism, Biochem. Ztschr. **141:** 160 (Sept. 28) 1923.

[11] Hottinger, A.: The Mode of Action of Sulphur, Schweiz. med. Wchnschr. **4:** 429 (April 26) 1923.

* From the Department of Pharmacology, Medical College of Virginia.

[1] Burmeister, W. H., and McNally, W. D.: Acute Mercury Poisoning, J. M. Res. **36:** 87 (March) 1917.

[2] Burmeister, W. H.: The Effect of Extensive Venesection and Transfusion on Kidney Lesions in Severe Acute Mercuric Chloride Poisoning, J. Lab. & Clin. Med. **2:** 500 (April) 1917.

A number of "antidotes" have been proposed for mercuric chlorid; most of these have been shown to be of no value; one, at least, when administered intravenously, is actually injurious.[3]

Dennie and McBride,[4] following the suggestion of Ravaut,[5] have recently advocated the use of sodium thiosulphate as an antidote for a whole group of toxic metals. There seems to be considerable clinical evidence that this salt is distinctly useful in certain forms of arsenical poisoning; moreover, Voegtlin [6] has offered proof of this, secured by animal experimentation. On the other hand, clinicians who have used sodium thiosulphate in mercurial poisoning are not in agreement as to its efficacy in this form of intoxication. Dennie and McBride,[4] in their first publication, said: "While the beneficial action of sodium thiosulphate is most remarkable in arsenical dermatitis, it is even more so in the treatment of acute mercurial poisoning and mercurial stomatitis." Later, they modified their view as to the mechanism of the action of the antidote, but their enthusiasm appears to have suffered no abatement; for they believe "sodium thiosulphate is a highly efficient and rapid neutralizing agent for the common metallic poisons, arsenic, mercury, lead and bismuth." [7] Semon [8] also feels that sodium thiosulphate is of unquestioned value in the treatment of mercurial stomatitis and that "it may be found, furthermore, to be an indispensable adjunct in the treatment of all cases of acute metallic poisoning."

Opposed to these views, Schamberg [9] early expressed skepticism regarding the efficacy of sodium thiosulphate in mercury poisoning: he felt that it "will have to await more extended clinical trial." Michael [9] found that, in his hands, mercurial stomatitis seemed unaffected by the administration of thiosulphate; Cole [9] had "several experiences with severe mercurial intoxication and in none of these cases did the introduction of this drug intravenously or by mouth have any effect on the condition."

Unfortunately, Dennie and McBride do not give certain rather essential details in the histories of the few cases of mercurial poisoning that they report. They state [7]: "It is a well known fact that mercuric chlorid is nearly always fatal, if taken in doses of 7½ grains (0.5 gm.) or more, on an empty stomach." They say, further, that more than forty cases have been treated "by this method"; referring apparently to the thiosulphate method. They neglect to state, however, whether all of the more than forty patients were fasting long enough before the administration of the mercury to insure the empty stomach on which they base their bad prognosis, in the absence of thiosulphate treatment; they fail to mention whether gastric lavage was practiced; no note is made of whether emesis occurred. Finally, they report a mortality of approximately 10 per cent.; certainly not a low figure as compared with that given in larger series not having the benefit of thiosulphate medication.

It is a matter of record that recovery has been reported following the oral administration of one or even more than one $7\frac{3}{10}$ grain tablet (0.48 gm.) of mercuric chlorid, when very different methods of treatment have been employed, some of these methods being the most bizarre and least likely to exert a favorable action. Naturally, the minimal fatal dose of mercuric chlorid for human beings by oral administration must remain a matter of speculation; in dogs, when the animals have been fasted twenty-four hours and given morphin to prevent emesis, as much as 25 mg. per kilogram of body weight may be required to cause death, though some dogs, under the same conditions may fail to survive a smaller dose. On the other hand, it is so rare for a dog, regardless of age or weight, to survive the intravenous injection of 4 mg. of mercuric chlorid per kilogram that we suspect technical error when this does occur. Indeed, a considerable proportion of the animals die after the intravenous injection of 3 mg. of mercuric chlorid per kilogram. Taking the upper limits for the fatal oral dose (25 mg. per kilogram) and the fatal intravenous dose (4 mg. per kilogram) in the dog, it is apparent that the former is a little over six times as large as the latter.

Lambert and Patterson [10] report a fatal outcome in a patient who received 1½ grains (0.1 gm.) of mercuric chlorid intravenously; this patient, however, was suffering from some pathologic condition, and it is probable that his resistance to the poison was diminished. Vecki [11] reports poisoning after as little as 3 mg. of mercuric chlorid intravenously; and, apparently, the injection of 0.02 gm. by this route was followed by a severe reaction. On the other hand, Dr. W. F. Grigg and Dr. Howard Urbach inform us that they have used as much as 1 grain (0.065 gm.) intravenously in adults. In one case, the patient did not weigh more than 130 pounds (59 kg.) and in no instance did they observe unfavorable results that could be attributed to the mercuric chlorid. It must be accepted that the intravenous injection of as much as 1 mg. of mercuric chlorid per kilogram of body weight has been survived by human beings; it would seem justifiable to assume, therefore, that six times this amount, namely, 6 mg. per kilogram of body weight, would be survived if the poison was given orally. If this is correct, a patient weighing 70 kg. could absorb as much as 6½ grains (0.43 gm.) of mercuric chlorid from the alimentary canal and yet survive. There are fewer more potent emetics than mercuric chlorid. Rarely does profuse emesis fail to occur rather promptly after the oral administration of this poison; it is probable that a portion of the administered poison is expelled in this way and escapes absorption. Naturally, the rate at which mercuric chlorid passes from the stomach will vary in different individuals, and in the same individual under different conditions. It is the almost universal practice to employ gastric lavage, as soon as the patient is seen; if this procedure is resorted to within any reasonable time after the ingestion of the poison, it is to be assumed that this measure also removes some of the mercury and prevents its absorption. Therefore, it seems unjustifiable to take for granted that the oral administration of $7\frac{3}{10}$ grains (0.48 gm.) of mercuric chlorid to an adult human being in good condition would be "nearly always fatal," even in the absence of thiosulphate medication.

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[3] Haskell, C C, and Courtney, R H The Value of Calcium Sulphide in the Treatment of Poisoning by Mercuric Chloride, J. Lab & Clin. Med. **3**: 110 (Nov) 1917

[4] Dennie, C. C, and McBride, W L Treatment of Arsphenamin Dermatitis and Certain Other Metallic Poisonings, Arch. Dermat. & Syph. **7**: 63 (Jan) 1923

[5] Ravaut, cited by Dennie and McBride (Footnote 4)

[6] Voegtlin, Carl; Dyer, H A., and Leonard, C S: On the Specificity of the So Called Arsenic Receptor in the Higher Animals, J. Pharmacol & Exper Therap **25**: 297 (May) 1925

[7] Dennie, C C, and McBride, W L· Treatment of Arsphenamin Dermatitis, Mercurial Poisoning and Lead Intoxication, J A. M. A. **83**: 2082 2085 (Dec. 27) 1924

[8] Semon, H. C.: An Antidote for Arsenic, Bismuth and Mercury Poisoning, Brit. M. J. **1**: 662 (April 12) 1924

[9] In discussion on Dennie and McBride (Footnote 7).

[10] Lambert, S. W., and Patterson, H. S.: Poisoning by Mercuric Chlorid and Its Treatment, Arch. Int. Med. **16**: 865 (Nov.) 1915.

[11] Vecki, V. G.: The Use of Intravenous Injections of Mercuric Chlorid, J. A. M. A. **72**: 1596 (May 31) 1919.

Because of such considerations as these, it seemed most desirable to investigate the efficacy of sodium thiosulphate as an antidote in dogs that had been poisoned with a definite amount of mercuric chlorid. Not only could the matter of dosage of the poison be accurately controlled, but treatment could be limited to the method under investigation, and other measures that might exert an influence on the course of the poisoning be omitted.

As has been pointed out, the fatal dose of mercuric chlorid for dogs by oral administration varies considerably, although precautions are taken to have the stomach empty, and morphin is given to prevent emesis. Moreover, in the present investigation, we were concerned with the action of sodium thiosulphate against the mercury that had passed from the alimentary canal and entered the circulation. Because of these reasons, the intravenous method of administering the poison was employed. Sansum [12] has determined that 4 mg. of mercuric chlorid per kilogram injected intravenously is invariably fatal to the dog; in the single instance in which this dose was survived in our experiments, we had reason to believe that a portion of the solution escaped outside the vein.

According to Dennie and McBride,[4] a dose of as much as 2 gm. of sodium thiosulphate may be injected intravenously into man, with impunity. As judged by the immediate effects following the injection of sodium thiosulphate intravenously into dogs and the behavior of the animals for several days subsequently, the salt must have an extremely low toxicity. In the form of a 10 per cent. solution in distilled water, doses of 0.1 and 0.2 gm. per kilogram cause not the least appearance of discomfort and have no effect on the animal's health. As much as 2 gm. per kilogram was injected intravenously in 50 per cent. solution; emesis resulted, but the following day the dog seemed normal.

Table 1.—*Results of Thiosulphate Medication in Dogs Poisoned by Mercury*

Number	Weight in Kg.	Dose Hg, Mg. per Kg.	Dose of Thiosulphate, Mg. per Kg.	Interval Between Hg Administration and Thiosulphate	Duration of Life
27*	8.8	4	50	8 minutes	4 days
28*	9.8	4	50	2 minutes	4 days
29*	9.5	4	50	1 minute	5 days
32*	11.9	4	50	2 minutes	3 days
33†	6.8	4	50	7 minutes	5 days
34*	13.2	4	50	2 minutes	3 days
30	14.4	4	0	....	3 days
31	20.4	4	0	....	4 days

* Received two injections of thiosulphate.
† Received three injections of thiosulphate.

Dennie and McBride [7] recommend a maximum dose of 1.8 gm. of sodium thiosulphate; in view of the apparent high tolerance of dogs for this salt, it was felt that a dose of 0.05 gram per kilogram could be used with safety.

The first experiments were carried out during April and May, 1925. Eight dogs were given a dose of 4 mg. of mercuric chlorid per kilogram, a 1 per cent. solution in distilled water being injected into the marginal ear vein. Two of the animals served as controls; the remaining six were given intravenous injections of a freshly prepared solution of "chemically pure" sodium thiosulphate within a few minutes after receiving the mercury. In the case of five of these treated dogs, a second injection of freshly prepared thiosulphate solution was made twenty-four hours later; the sixth dog received such an injection at the end of twenty-four and at the end of forty-eight hours. The results of these experiments are given in Table 1.

The average duration of life for the treated dogs was four days; that for the two controls was three and one-half days. In a series of dogs given the dose of 4 mg. of mercuric chlorid earlier in the year, the average duration of life was 4.6 days without treatment; from this, the inference appears to be justified that the intravenous injection of a large dose of sodium thiosulphate, within a few minutes after a fatal dose of mercuric chlorid had entered the circulation, had not the least influence on the course of the poisoning.

Table 2.—*Repeated Administration of Thiosulphate to Dogs Poisoned by Mercuric Chlorid*

Number	Weight in Kg.	Dose Hg, Mg. per Kg.	Dose of Thiosulphate, Mg. per Kg.	Interval Between Hg Administration and Thiosulphate	Duration of Life
35	10.9	4	50*	2 minutes	5 days
36	14.5	4	50†	3 minutes	3 days
37	13.7	4	50‡	1 minute	4 days
38	5.9	4	50†	2 minutes	3 days
39	5.8	4	50*	1 minute	5 days
40	10.7	4	0	....	4 days

* Received a total of five injections of thiosulphate.
† Received a total of three thiosulphate injections.
‡ Received a total of four injections of thiosulphate.

The treatment employed in these dogs differs from that recommended by Dennie and McBride in one important particular: Although the antidote was administered early, in five instances, it was used only twice; in the sixth case, only three times; whereas they recommend the daily administration of the thiosulphate for four doses. Therefore, it was determined to run a second series of experiments, the antidote being injected every twenty-four hours until the death or recovery of the animals.

Six dogs were used in these later experiments; one serving as control. The same dosage and method of administration for the mercuric chlorid was employed. A fresh solution of sodium thiosulphate ("chemically pure") was injected as soon as possible after the injection of the mercury and on each succeeding day until the death of the animal, the dose of thiosulphate being, as in the first experiments, 0.05 gram per kilogram. With these animals, also, the results were disappointing, as may be seen from Table 2.

In spite of early and repeated use of the sodium thiosulphate, the course of the poisoning seemed entirely unaffected. The average duration of life in the five treated dogs was 4.75 days, as compared with a duration of 4.6 days for the series of controls run earlier.

One can scarcely escape the conclusion, therefore, that sodium thiosulphate is of no value as an antidote for the mercury that has gained entrance into the circulation, because in these experiments the antidote was given with much less delay than would be practicable clinically and nevertheless was entirely ineffective, either to save the animals or even to delay the occurrence of death to any significant degree.

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12. Sansum, W. D.: The Principles of Treatment in Mercuric Chlorid Poisoning, J. A. M. A. **70:** 84 (March 23) 1918.

Clinical Notes, Suggestions, and New Instruments

A METHOD FOR WASHING FIXED TISSUE*

Bernard G. H. Thomas, Pittsburgh

In the preparation of good histologic sections for microscopic examination, it is essential that all tissue fixed in Zenker's solution or other fixatives containing bichromate should be thoroughly washed in water.

None of the methods used were found to be entirely satisfactory, and it occurred to me that a tea ball might answer the purpose. It fulfilled the requirements and has been found to be very convenient. The tea ball is of the conventional aluminum type that screws together and has a chain with a hook fastened to the top. The ball containing the tissue is simply placed in a vessel of running water, with the hook fastened on the side. With this device, the specimens can be thoroughly washed without injury. The identification tag can either be placed with the tissue or be fastened on the chain. The ball is cheap and easily cleaned.

HERPES ZOSTER SIMULATING NEPHROLITHIASIS

Wyndham B. Blanton, M.D., Richmond, Va.

A woman, aged 52, was suddenly affected by pain immediately over and below the left tenth rib posteriorly. The pain was sharp and cutting, did not radiate, and was not affected by breathing. For the past five years the patient had been under observation for an elevation of blood pressure (systolic, 200; diastolic, 110); she had frequent headaches, a faint trace of albumin in the urine, no casts, a negative Wassermann reaction, a blood urea of 25 mg. per hundred cubic centimeters, a normal blood count, and normal stools. There was moderate tenderness on the left side over an area about the size of the hand, extending from the tenth rib down. The greatest tenderness seemed to follow the course of the last intercostal nerve. The impression was intercostal neuralgia.

The pain was controlled by acetylsalicylic acid during the daytime, but was worse at night, gradually increasing in severity until the fourth night, when it was very bad. The fifth day the pain was still worse, and the patient was unable to sleep in spite of codein. The pain radiated around the left side as far as the left mid-Poupart's line. On the fifth night, the pain was severe enough to demand morphin for relief. It was chiefly referred to the abdomen over an area about three inches in width and in a line with the umbilicus. The temperature and pulse were normal; there was no nausea or vomiting. Examination showed the heart and lungs to be normal. The urine showed red blood cells (the patient had not menstruated for six months and was considered past the menopause). The impression was renal calculus, involving the left side.

The patient was sent to the hospital for cystoscopy and pyelogram. The findings in both instances were reported negative. On the day she entered the hospital, there was noted a slight macular redness over a small area on the left side of the abdomen corresponding to the site of the pain. This was attributed to mustard plasters. On the seventh day, there was observed at this site a typical patch of herpetic vesicles about the size of a dollar. Considerable soreness persisted, but the pain was much improved. On the eighteenth day after onset the herpetic eruption faded slowly, pain ceased, and the patient began to menstruate. The diagnosis was herpes zoster, involving the tenth left thoracic nerve.

COMMENT

1. Sudden pain over the origin of the tenth left intercostal nerve, associated with tenderness without any other signs, at first gave the impression of intercostal neuralgia.

2. Increasing severity of the pain, its radiation around the left side to the abdomen, and the appearance of red blood cells in the urine in a woman thought to be past the menopause caused the change in diagnosis to nephrolithiasis.

3. Negative findings at cystoscopy and pyelogram, and the beginning of the menstrual flow (for the first time in six months), together with the appearance on the seventh day of a typical herpetic eruption over the site of the abdominal radiation of the pain, lead to a third shift in diagnosis to herpes zoster.

This case is cited as illustrating how herpes zoster with the late appearance of eruption may in its early stages simulate other conditions, particularly nephrolithiasis in the menstruating woman.

300 West Grace Street.

New and Nonofficial Remedies

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application. W. A. Puckner, Secretary.

CHLORETONE (See New and Nonofficial Remedies, 1925, p. 91).

The following dosage form has been accepted:

Boro-Chloretone: A dusting powder composed of chloretone, 1 part; boric acid, 1 part; purified talc, 2 parts.

POWDERED WHOLE LACTIC ACID MILK-MERRELL-SOULE.—A modified milk preparation prepared from whole milk soured by the action of a culture of *Bacillus bulgaricus.* Each 100 Gm. contains approximately butter fat, 28 Gm.; protein, 26 Gm.; lactose, 33 Gm.; free lactic acid, 4 Gm.; ash, 6 Gm.; moisture, 3 Gm.

Actions and Uses.—When suitably mixed with water, powdered whole lactic acid milk-Merrell-Soule is said to be useful in the feeding of infants when a soured milk is indicated.

Dosage.—To prepare powdered whole lactic acid milk-Merrell-Soule for use, 4½ ounces (16 tablespoonfuls) are added to 32 fluidounces of previously boiled water and stirred until a uniform mixture results. One hundred Cc. of the finished mixture contains, approximately, butter fat, 3.3 Gm; protein, 3 Gm.; lactose, 3.8 Gm.; ash, 0.7 Gm.

Manufactured by the Merrell-Soule Company, Syracuse, N. Y. No U. S. patent or trademark.

Malignant Disease of the Lung.—Malignant disease of the lung may be either a sarcoma or a carcinoma. The former generally arises in mediastinal glands and is rare in lung tissue except as a direct extension. Carcinoma, on the other hand, arises in the lung and occurs in two forms: (1) a single deposit of growth arising in a large bronchus near the root of the lung and growing outward toward the periphery, and generally producing a secondary bronchiectasis; (2) a diffuse carcinomatosis arising in the finer bronchioles, generally of the lower lobe. The latter is the only form that is at all likely to be confused with pulmonary tuberculosis. The small carcinomatous nodules in this condition are discrete and peribronchial in distribution, grayish, and not unlike small tubercles. . . . As a rule this diffuse carcinomatosis, unlike tuberculosis, attacks the lower lobe; this in itself is a helpful distinction. It also produces very great enlargement of the mediastinal glands, with secondary deposits therein—a greater enlargement than is likely to be found in tuberculosis, and one which is apt to affect the anterior and superior mediastinal groups, which tubercle rarely does.—Gloyne, S. R.: Some Pulmonary Lesions Simulating Tuberculosis, *Tubercle,* November, 1925, p. 61.

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* From the Bureau of Mines, Department of Commerce.

THE JOURNAL OF THE
AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 5, 1925

MILK MIXTURES FOR INFANT FEEDING

To a person confronted for the first time with the problem of the artificial feeding of infants, the multiplicity of recommendations, many of which claim to be based on "expert" testimony and trial, must tend to be bewildering. He is likely to wonder why and how such seemingly unlike prescriptions could have been suggested for a common need; he can scarcely avoid at least the preliminary conclusion that infant feeding is a practice guided by unconcealed empiricism rather than scientific rationale; he may even doubt the propriety of the dictum that "feeding must be a matter of principle and not of impulse." It has been said that the ordinary problem in artificial feeding is one of adapting cow's milk to the digestive tract of the baby and at the same time providing, as far as possible, a normal supply of all the essentials for nutrition and growth. There are many special devices by which these objects can be attained, and the wise physician adopts the one that seems best suited to the individual case.[1]

According to a recent writer,[2] Underwood, in 1793, was the first to use cow's milk as a food for infants. About the middle of the nineteenth century, the manufacture and sale of proprietary foods became important. Meanwhile, the number of formulas for the use of infants has become legion. As a rule, these food mixtures are expressed as the proportions by weight or volume which the various food components are of the total mass of the food—the so-called percentage system. Powers,[3] of the department of pediatrics, Yale University School of Medicine, has pointed out that certain similarities and differences in foods, so formulated, may be suggested in a vague way; but the essential fact inherent in "the percentage system," namely, that the values of the nutrients are ratios that express only degree of concentration, is often lost sight of. For comparative purposes, especially, it is difficult to perceive significant facts from small, often fractional, percentage values of protein, carbohydrate and fat, which shift with changes in volume. Powers has therefore essayed to compare the composition of a number of milk mixtures in terms of the percentage of each energy-producing nutrient in the total energy value of the food as fed. This method of food evaluation, he points out, has been the means of extricating these heterogeneous mixtures from a maze of quantitative relationships, which are metabolically meaningless, and has made them available for comparative study on a significant basis in terms of "the standard unit of nutritional currency"—the calory—and without regard to water content.

The surprising feature of such an evaluation of feeding mixtures is that so few of them resemble human milk, the presumable prototype of an infant's food, in respect to the relative proportions of protein, fat and carbohydrate. Powers observed that human milk stands apart from the commonly used infant feedings more conspicuously than does cow's milk, in spite of the endeavor of pediatricians to approach the one and to flee from the other. All the common mixtures, as well as both human and cow's milk, fall into a few well defined groups, so that from the standpoint of the relative proportions of the various nutrients "a host of apparently dissimilar milk mixtures have lost an artificial individuality." The mixtures that experience has shown to be particularly successful in feeding infants fall into a majority group that approaches the caloric percentage pattern of the food mixtures in the sweetened condensed milk group; about 60 per cent. of the total calories are in whole milk, and 40 per cent. in added carbohydrate. In other words, when the multitude of milk mixtures commonly used in infant feeding are reduced to the caloric percentage formulation, it is perceived that many of them are essentially alike or identical, excepting in concentration, degree of denaturization by cooking or souring, and qualitative differences in protein, carbohydrate, fat and salts. In comparing the numerous formulas studied, Powers remarks:

> The milk mixtures which conform to the caloric percentage distributions of the majority and sweetened condensed milk groups are widely used, because experience has shown that most infants thrive on one or another of them. If one mixture in the group does not seem satisfactory, then another mixture is tried and perhaps still another and probably, finally, sweetened condensed milk itself. Physicians little realize that these mixtures differ but little from one another, except in the amount of dilution and degree of cooking. It is an astonishing fact that one-third strength cow's milk with 5 per cent. sugar—a mixture universally used in infant feeding and regarded as orthodox by pediatricians of all schools—differs from sweetened condensed milk as it comes from the can only in degree of dilution and extent of denaturization by cooking and storage. On no mixtures in the other groups discussed have large numbers of average infants been fed successfully for considerable lengths of time.

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[1] Rose, M. S.: Feeding the Family, New York, The Macmillan Company, *1924*.

[2] McCollum, E. V., and Simmonds, Nina: The Newer Knowledge of Nutrition, Ed. 3, New York, The Macmillan Company, *1925*.

[3] *Powers, G. F.:* Comparison and Interpretation on a Caloric Basis of the Milk Mixtures Used in Infant Feeding, Am. *J. Dis. Child.* **30:** 453 (Oct.) 1925.

Many supposedly different infant foods are essentially similar, except with respect to their water content. Dilution is doubtless a disadvantage in some cases; in others, it seems to promote utilization. In any event, the infant's requirement of water may well be considered by itself rather than as a feature of the proportion of the food ingredients.

THE MEASUREMENT OF BASAL METABOLISM

The subject of basal metabolism—the energy production of man during complete muscular repose and in the fasting state—has of late been brought "out of the realm of pure physiology into the domain of clinical medicine." Reference to calorimetry in medicine no longer is disconcerting to the general practitioner. Incompetent though he may be to deal with the technical details of the measurements, he has become aware of the help that a knowledge of his patients' fundamental energy exchange may furnish in the diagnosis of certain disorders and in the interpretation of his therapeutic ventures in relation to them. The physician should assure himself, however, that the technic of the estimations of basal metabolism in his patients is adequate and dependable. A medical writer[1] has recently remarked that there is a tendency in some hospitals at present to turn over the management of the metabolism laboratory to a technician who has had no training in medicine or in the science of nutrition. Such persons often do well in metabolism work just as do technicians in roentgen-ray diagnosis or bacteriology. On the other hand, they can scarcely be blamed if they get far off the track and make disastrous errors. They may be excellent in their technic, he adds, but the management of experiments and the interpretation of results in patients should be in the hands of a clinician who has made some special study of metabolism. This man should be thoroughly familiar with the technic himself, as it is only in this manner that he can be on guard against all the possible errors.

Even the expert is beset with uncertainties. Benedict[2] believes that knowledge of the extent to which body temperature, skin temperature, exposure to a cold environment, sleepiness and psychic unrest may affect basal metabolism is as yet too uncertain. With respect to some of them, he has lately furnished helpful information by the demonstration that prolonged rest in a hospital bed, prior to basal metabolism measurements in the morning, is seemingly no longer justified. This conclusion is the outcome of studies in which the influence on basal metabolism of varying periods of repose and exposure to weather was considered. In the case of normal persons, at least, the exercise of rising, bathing, dressing, walking and mounting several flights of stairs is without influence on the basal metabolism on any certain day, provided the usual rest period of one-half hour is insisted on.

Benedict has pointed out that, to obtain the needed repose prior to the measurements, two methods are in use. Many physicians require patients to come to the hospital in the evening and sleep during the night in a hospital bed. Numerous laboratories and clinics ordinarily permit patients to come to the laboratory from their homes in the morning. In the latter instance, the journey to the laboratory involves varying amounts of exercise and exposure, but in such cases a thirty minute period of complete muscular repose, with the subject lying on a comfortable bed or couch, well clothed and lightly covered, is usually and should always be insisted on. The overnight hospital regimen no longer seems to be requisite. It is true that the exposure incident to the migration from home to the metabolic laboratory is likely to bring about great changes in skin temperature, usually with a consequent lowering of the temperature of the peripheral tissues. But, according to Benedict's observations, at least under conditions in which excessive chilling or shivering is not induced, the heat production is entirely independent of the transitory heat loss, for there may be large amounts of heat either stored in or lost from the peripheral tissues without reaction on the actual heat production. The problem of the clinical measurement of basal metabolism thus becomes somewhat simplified.

FUNCTIONAL TESTS FOR GASTRIC SECRETION

More than half a century has elapsed since Kussmaul, in 1867, demonstrated the value of the stomach tube in clinical work. The older method of examination in which the gastric contents were withdrawn entirely at the end of an interval during which the test meal remained in the stomach has gradually been replaced in many quarters by fractional withdrawal. In this, gastro-enterologists have followed, in particular, the lead of Rehfuss of Philadelphia. The use of the roentgen rays and their more direct visual application to the examination of the stomach have tended to decrease the practice of chemical gastric analysis. In reviewing his own experience with the method of fractional gastric analysis, Larimore[1] of the Washington University Medical School in St. Louis concludes that if the procedures are well standardized the technic affords valuable data on gastric secretion. It does demonstrate, he states, alterations in gastric secretion and motility that are more or less directly diagnostic and helpful therapeutically. The demonstration of an achlorhydria is prompt and conclusive. The extent to which the data developed by this

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[1] Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, Lea & Febiger, 1924.

[2] Benedict, F. G., and Crofts, E. E.: The Fixity of Basal Metabolism, Proc. Nat. Acad. Sc. **11**: 585 (Oct. 15) 1925.

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[1] Larimore, J. W.: Gastric Analysis, J. Lab. & Clin. Med. **11**: 1 (Oct.) 1925.

method of gastric analysis may be diagnostically or therapeutically useful is more limited than has been claimed for practical deductions from analogous data in the past. Larimore adds that gastric analysis cannot be discarded as being altogether superseded or replaced by newer methods of gastro-intestinal examination. The examination of the fasting contents of the stomach is essential to gastro-intestinal diagnosis, and the observation of the curve of the gastric acidities by the slow fractional method may give useful and necessary information. Knowledge of the gastric acidities, he concludes, has been of the greatest help in selecting a diet, especially with a consideration of the buffer values of various foods.

It should be remembered, however, that studies of the normal stomach have shown gradations from achylia to so-called hyperacidity. Rehfuss[2] has remarked that studies of healthy men indicate that "there is no acidity in disease which cannot be encountered in health." Such circumstances have led Carlson[3] to insist that the clinician must henceforth take cognizance of the fact that hypersecretion and clinical hyperacidity as well as hypo-acidity and anacidity not only are compatible with health, but are found in a considerable percentage of normal individuals.

In the ordinary gastric functional tests, the provocatives to secretion consist of the direct mechanical effect of the meal, of psychic influences related to its ingestion, or of chemical secretagogues present in or derived from the food. Other substances, however, may also bring about functioning of the secretory cells of the stomach mucosa. It is readily conceivable that if such stimulants could be administered in standardized ways, important information might be elicited in regard to the secretory capacity of the glands. Gompertz and Vorhaus[4] have secured new evidence that histamin, injected subcutaneously, stimulates the flow of gastric juice in man. Doses of 1 mg. of histamin hydrochlorid are effective in this respect and apparently harmless. By the use of this test they were able to differentiate between true and "apparent" achylia gastrica. The possibility of distinguishing between organic and functional causes of suppressed secretion at once suggests itself. At any rate, Gompertz and Vorhaus have not found any other test that will permit equally satisfactory diagnosis of the capacity of the gastric glands to secrete "free" hydrochloric acid. The histamin test may be of assistance in the early diagnosis of pyloric carcinoma. Whether the drug offers possibilities as a therapeutic agent in conditions of diminished digestive function cannot yet be predicted.

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[2] Rehfuss, M. A.: Possibilities of Fractional Gastric Analysis, J. A. M. A. **71**: 1534 *(Nov. 9)* 1918.

[3] Carlson, A. J.: The Secretion of Gastric Juice in Health and Disease, Physiol. Rev. **3**: 1 (Jan.) 1923.

[4] Gompertz, L. M., and Vorhaus, M. G.: Studies on the Action of Histamine on Human Gastric Secretion, J. Lab. & Clin. Med. **11**: 14 (Oct.) 1925.

SKIN TEMPERATURE AND HEAT LOSS

The physician has come to regard the temperature of the body as a manifestation exhibiting such constancy in health that he can depend on deviations from the normal records to furnish evidence of disease. He concludes that heat production and heat loss are so perfectly regulated under normal physiologic conditions as to maintain a practically constant body temperature. This is generally considered to be 98.6 F., but there are fluctuations from this average which, with the ordinary person, may amount to 2 degrees Fahrenheit in twenty-four hours, the minimum temperature occurring at about 4 a. m. and the maximum about 5 p. m. under conditions of repose, with higher temperatures during severe muscular work. Benedict[1] has reminded us that as an indication of the presence or absence of fever, the temperature taken in any of the usual localities is perfectly satisfactory, but as a means of studying the total heat stored in the body such temperature records are deceptive. The temperature in the mouth, axilla or groin, for instance, is almost invariably somewhat lower than that in the rectum. Thus, a gradient exists between the temperature deep in the trunk and the temperature near the surface of the body. This gradient has been studied, and it has been found that between the temperature deep in the trunk and that 1 cm. from the orifice of the rectum or vagina there is a difference of from 2 to 3 degrees Centigrade.[2]

As might be expected, the temperature of the skin is somewhat lower than that of the interior. In studies made at the nutrition laboratory of the Carnegie Institution of Washington in Boston,[3] the actual temperatures have been found to vary with that of the surrounding air, the movement of the air, the character of the clothing worn, and other environmental factors, but observations show further that even under uniform conditions the temperatures of different parts of the skin are by no means the same. Thus, the body when unclothed at an outside temperature of 14.6 C. (58.3 F.) showed a skin temperature at the waist and chest of 30 C. (86 F.), while at the ankle it was only 20 C. (68 F.). Evidently the loss of heat from the skin is not always equally compensated in different areas.

These regional differences in body temperature tend to disappear when adequate protective covering is furnished, whereby a person provides himself with a layer of warm air—his "private climate." Thus, after a long sojourn under bedclothing, there tends to be a fairly equable temperature about the abdomen and trunk, with a tendency for the extremities to be somewhat cooler as the distance from the trunk increases. Under the ordinary conditions of dress, however, Benedict's temperature surveys show invariably a distinct correlation between the skin temperature and the temperature of the exterior, this correlation being noted even in the well protected parts of the trunk. Thus, on a cold day the entire trunk may have a skin temperature as low as 31 C. (87.8 F.), with the temperature of the legs and feet falling off to not far from 24 to 25 C. (75.2 to 77 F.).

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[1] Benedict, F. G.: Skin Temperature and Heat Loss, Proc. Nat. Acad. Sc. **11**: 549 (Sept.) 1925.

[2] Benedict, F. G., and Slack, E. P.: Carnegie Inst. Washington Pub. No. 155, 1911.

[3] Benedict, F. G.: Miles, W. R., and Johnson, A.: Proc. Nat. Acad. Sc. **5**: *218, 1919.*

These studies on skin temperatures in relation to the environment leave little doubt that the loss of heat through radiation is an important factor in the heat regulation of the organism. Of course, heat is also lost by the vaporization of water through the lungs and skin, approximately from one third to one quarter leaving through the skin. In a person engaged in severe exercise with an output in excess of 7,000 calories daily, Benedict found that essentially one half was lost by the vaporization of water, while more than 3,600 calories was removed from the body by direct radiation. He has reached the conviction that, except under extreme conditions, heat production and heat loss are two essentially independent processes. According to Benedict, considerable fluctuations in the heat stored in or lost from the body are possible, resulting in rather profound changes in the temperature of the peripheral tissues without appreciable alteration in heat production. This presents a somewhat new point of view in the consideration of the body's heat control.

Current Comment

EFFECT OF IRRADIATED TUMOR TISSUE

For some years it has been urged that inoculation of animals with certain types of live tumor tissue renders the animal resistant to further inoculation of tumor substance, provided the first tissue inoculation resulted in a "take" with ultimate regression. Investigators, therefore, have reasoned that tumor tissue, of which the virulence had been decreased by exposure to the roentgen ray, when implanted into animals might protect against further inoculation by the same tumor, and, on the other hand, that the growth of already implanted tumor substance might be checked by subsequent inoculation of irradiated tissue. Experiments tended to confirm them in the belief that such protective and curative effect could be produced in the manner outlined. Francis Carter Wood and Rosa E. Prigosen,[1] however, thought that the experiments were not conclusive for the reasons that too few animals and too few types of tumors had been used, some of the tumors used were self-immunizing, and not enough allowance had been made for natural immunity in the animals. Therefore, they repeated the experiments of their predecessors on a large scale, using many white mice and rats and a variety of tumors. The data secured from some 6,000 experimental inoculations and more than 30,000 control stock inoculations seem to them to furnish considerable evidence against the assumption either that immunity to inoculation or resistance to a growing mouse or rat tumor can be induced by the inoculation of irradiated tumor material. Similar conclusions are repeated in two articles, published at the same time, by Small, Evans and Krumbhaar,[2] who found that the growth of established rat sarcoma No. 10 was affected neither by a single injection nor by three injections at weekly intervals of homologous tissue cells that had been devitalized by exposure to roentgen ray. Wood and Prigosen reach finally the following practical conclusions:

> If no such immunity can be produced in animals, the experimentation on human beings should be abandoned immediately as not only useless but dangerous and wholly unjustifiable from a scientific point of view.

NASAL SENSITIZATION IN BRONCHIAL ASTHMA

Appreciation of the varied clinical manifestations of hypersensitiveness to foreign substances in the body has grown more rapidly than exact knowledge in regard to its scientific aspects. Yet it is only on the basis of the latter that any truly rational management of the anaphylactic features of asthma and allied disorders can be formulated. Reviewing the subject from a broad point of view, Longcope[3] of the Johns Hopkins Hospital regards it as apparent that hypersensitiveness shown by different people to pollens, animal emanations, foods, drugs, and possibly bacteria, is dependent on a common pathologic state. The symptoms, it is true, arising from this state of hypersensitiveness may vary in different patients, for in one person they may indicate involvement of the respiratory tract, in another, of the gastro-intestinal tract, or in a third, some disorder of the skin; but, on the other hand, in many reported instances of hay-fever or asthma, gastro-intestinal disturbances and skin eruptions have appeared simultaneously or alternately in the same individual, and so far no arguments have been adduced to lead one to believe that the fundamental alterations in the tissues of the patient who suffers from hay-fever due to ragweed are essentially different from those of a similarly hypersensitive patient who suffers from urticaria or gastro-intestinal disturbances from eating eggs. As a matter of fact, Longcope adds, the ingestion of a single food, such as eggs, may cause in the same person or in different persons such varied symptoms as urticaria, eczema, asthma and gastro-intestinal disturbances. There has been no agreement as to the mode of sensitization of otherwise healthy persons to foreign proteins. The sound skin offers little likelihood of invasion; hence the nasopharynx, the respiratory tract and the alimentary tract present themselves as additional possibilities. Selecting a material, horse dander, that is now regarded as definitely anaphylactogenic,[4] Ratner, Jackson and Gruehl[5] seem to have demonstrated that sensitization, anaphylactic phenomena and even anaphylactic death can be secured when the nasal route is the avenue of entrance of the foreign product. Feeding the horse dander was without effect. Their tests were made on the guinea-pig, a species notably susceptible to small doses of foreign protein. Nevertheless, such striking phenomena corroborative of the observations of various earlier investigators call attention anew to the desirability of keeping in mind the nasal membrane as a portal of entry of noxious products in the mechanism of bronchial asthma in man.

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[1] Wood, F. C., and Prigosen, Rosa E.: No Immunity Produced by Inoculating Irradiated Tumor Tissue, J. Cancer Research **9**: 287 (Sept.) 1925.

[2] Small, J. C.; Evans, Mary J., and Krumbhaar, E. B.: Studies in Biological Resistance to Malignant Tumors, III and IV, J. Cancer Research **9**: 316, 323 (Sept.) 1925.

[3] Longcope, W. T.: Anti-Anaphylaxis and Desensitization, Physiol. Rev. **3**: 240 (April) 1923.

Association News

MEETING OF BOARD OF TRUSTEES

Abstract of the Minutes of a Meeting of the Board of Trustees of the American Medical Association, Held at Association Headquarters, Thursday and Friday, Nov. 19 and 20, 1925

All members of the Board, including the President, President-Elect and Speaker of the House of Delegates, were present.

COOPERATION WITH THE PROHIBITION DIRECTOR AND THE TREASURY DEPARTMENT

Dr. W. H. Mayer, chairman of the committee appointed by the Board of Trustees, at the direction of the House of Delegates, to cooperate with the Commissioner of Internal Revenue and the Secretary of the Treasury in the formulation of regulations under the National Prohibition Act, appeared before the Board. He presented principles formulated by the committee with a view to their incorporation in regulations to be suggested to the Commissioner of Internal Revenue. The principles embodied in the report of the committee dealing with the dispensing of liquors for medical purposes and with the assumed regulation of the practice of medicine by Congress were approved by the Board of Trustees.

RESEARCH FELLOWSHIPS

At the November meeting, the Board of Trustees referred to the Committee on Scientific Research a proposal for the establishment of research fellowships. Dr. Ludvig Hektoen, chairman, presented the report of the committee, approving in general the proposed establishment of such fellowships, provided adequate control of appointments and of the work of the appointees can be maintained. It was pointed out in the report of the committee that many such fellowships have already been established by other organizations. The matter was referred back to the Committee on Scientific Research for further study, and the committee was asked to report at a later meeting of the Board, offering suggestions as to the required machinery for carrying out the project.

GENERAL MANAGER'S REPORT

The General Manager of the Association reported to the Board on the business affairs of the Association, the status of its publications, and the work of various departments.

HYGEIA

The report of the General Manager showed that the circulation of *Hygeia* had been materially increased during the year, and that the financial position of the magazine is much stronger than ever before. *Hygeia* seems to be gaining favor with the general public, as well as with the medical profession. After full discussion, the Board of Trustees authorized the continuance of the policy and plans under which *Hygeia* has been published during the past year, and directed that Dr. Morris Fishbein, Editor of The Journal, shall also be Managing Editor of *Hygeia*, with Miss Jane Pine as associate editor, and that Drs. John M. Dodson, Arthur J. Cramp and Olin West shall serve as members of the advisory editorial board.

ENLARGEMENT OF ABSTRACT DEPARTMENT

The Board considered suggestions offered by the Editor of The Journal, for the enlargement of the abstract department of the Association, with a view to extending the scope of abstracts now published in the Association's journals and to the possible development of a comprehensive abstract service for individual physicians. Authorization was given for working out plans for the enlargement of the abstract department.

REDUCTION OF FEDERAL TAXES

Dr. Charles W. Richardson reported that he and Dr. W. C. Woodward, a committee appointed by the Board of Trustees to appear before the Ways and Means Committee of the House of Representatives had received a very satisfactory hearing, and that that committee would recommend to the House that the Harrison Narcotic tax be reduced from $3 to $1.

MANUAL OF PERIODIC PHYSICAL EXAMINATIONS

The General Manager reported to the Board that the manual on periodic physical examinations, prepared by a special committee, had been issued since the last meeting, and that several constituent state associations have ordered, through the Bureau of Health and Public Instruction, a sufficient number of copies of this manual to supply one to each of their members. The manual is furnished to state associations at cost.

NEWSPAPER PUBLICITY

Newspaper clippings forwarded to the Secretary of the Association, accompanied with vigorous complaints, were presented to the Board of Trustees. These dealt with statements alleged to have been made in papers presented before medical organizations, which were believed to reflect unfavorably on the medical profession at large. The Board appointed a committee to confer with the officers of the organizations at whose meetings these statements are alleged to have been made, in an endeavor to prevent the publication of similar statements in the future.

COMMITTEE ON SCIENTIFIC EXHIBIT

Dr. D. Chester Brown, chairman of the committee, presented the report of that committee, in which were discussed plans for the Scientific Exhibit at the Dallas Session.

PROTECTION OF MEDICAL RESEARCH

A report was presented from Dr. W. B. Cannon, which briefly reviewed the work of the Committee on the Protection of Medical Research since its appointment, and in which he tendered his resignation as chairman of the committee. Dr. Cannon's resignation was accepted by the Board with regret, to take effect in February, and the Secretary was instructed to express to Dr. Cannon the gratitude of the Board of Trustees for the splendid service that he has rendered over a long period of years in directing the work of this important committee.

REPORT OF SPECIAL COMMITTEE ON NATIONAL HEALTH COUNCIL

The special committee of the Board of Trustees composed of Drs. A. R. Mitchell, Charles W. Richardson and J. H. Walsh, to which was referred a proposal of the National Health Council, seeking active affiliation of the American Medical Association with that council, offered its report. The committee recommended that the Board of Trustees invite the directors of the National Health Council to submit a definite proposal relative to active affiliation of the American Medical Association with the council "that would insure the American Medical Association a legitimate representation in the directorate of the National Health Council in proportion to the membership and the influence of the American

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[4] Ratner, B.; Jackson, H. C., and Gruehl, H. L.: The Anaphylactogenic Character of Horse Dander and Its Crossed Relationship to Horse Serum, Proc. Soc. Exper. Biol. & Med. **23:** 16 (Oct.) 1925.

[5] Ratner, B.; Jackson, H. C., and Gruehl, H. L.: Nasal Sensitization, Nasal Anaphylactic Shock and Respiratory Symptoms Simulating Bronchial Asthma, in the Guinea-Pig, Proc. Soc. Exper. Biol. & Med. **23:** 17 (Oct.) 1925.

Medical Association in public health affairs" The Board of Trustees approved these recommendations of the committee

GORGAS MEMORIAL INSTITUTE OF TROPICAL AND PREVENTIVE MEDICINE, INCORPORATED

A special committee appointed by the Board at its November meeting to consider a proposal submitted to the Board of Trustees by the chairman of the board of directors of the Gorgas Memorial Institute of Tropical and Preventive Medicine, Incorporated, presented its report The proposal submitted to the Board of Trustees involved the appointment of three officers of the American Medical Association to serve as "related' directors of the Gorgas Memorial Institute of Tropical and Preventive Medicine, Incorporated, and the active affiliation, through such representation, of the American Medical Association with the Gorgas Memorial Institute as now constituted The report of the committee was adverse to the acceptance of this proposal, and the recommendations of the committee were adopted by the Board of Trustees

A special committee, composed of Drs W D Haggard, D Chester Brown, E H Cary, J H J Upham and J H Walsh, with Drs E B Heckel, chairman of the Board of Trustees, and Dr Olin West, Secretary and General Manager, as ex-officio members, was appointed to consider and report on proposals similar to those of the National Health Council and the Gorgas Memorial Institute of Tropical and Preventive Medicine, Incorporated, which may be submitted in the future

After the transaction of a large amount of routine business, the Board of Trustees adjourned until its regular annual meeting on the third Friday of February, 1926

ANNUAL CONFERENCE OF SECRETARIES OF CONSTITUENT STATE MEDICAL ASSOCIATIONS

The regular Annual Conference of Secretaries of Constituent State Medical Associations was held at the American Medical Association headquarters, Chicago, November 20-21 Thirty-nine secretaries, assistant secretaries and executive secretaries were in attendance, and the editors of eleven state medical journals, who are not secretaries, were also present at the conference, which was attended by the general officers and Board of Trustees of the Association and others interested The proceedings of this conference will be published in the *American Medical Association Bulletin*, beginning with the December number

THE DALLAS SESSION

Scientific Exhibit

The Scientific Exhibit will be located in the Manufacturers' Building of the State Fair Grounds, in this building will also be housed the registration bureau, technical exhibits, motion picture theater and six section halls

The Committee on Scientific Exhibit is desirous that the exhibits shall be presented in a way that will emphasize their scientific value This may be done by carefully worded explanatory placards, but particularly by personal demonstration (The committee requires that all booths shall be in charge of a competent demonstrator) Also it should be remembered that the general attractiveness of the exhibit is essential, the committee will do its part by having the booths decorated appropriately The total amount of space available for exhibit purposes is approximately the same as that of last year (10,000 square feet) From the interest already manifested in the next Scientific Exhibit, it is evident that large blocks of space cannot be assigned to individual exhibitors

A fully equipped motion picture theater for talks illustrated with lantern slides and motion pictures will be an adjunct of the Scientific Exhibit It will be located on the same floor, adjacent to the exhibit Unless there are exceptional reasons, the length of the periods will be limited to two quarters (one-half hour)

Application blanks for the exhibit or the motion picture theater may be obtained by sending requests for them to Director, Scientific Exhibit, 535 North Dearborn Street, Chicago

The committee will make no assignments previous to February 15, in order that the amount of space available may be apportioned to the best advantage to all concerned All applications must be received before this date

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest such as relate to society activities, new hospitals, education, public health, etc)

ALABAMA

Chiropractor Loses Appeal—The court of appeals Montgomery, November 11, upheld the Dallas circuit court in the conviction of J A Robinson, a chiropractor, Selma, on a charge of practicing without a license

Health Officer Appointed—The board of health of Houston County has appointed Dr Lewis Roy Poole full-time county health officer to succeed Dr. Thomas E Tucker, who resigned to accept a similar position in North Carolina ——Dr Harold P F Burbage, Charleston, S C, has been elected full time health officer of Jackson County

CALIFORNIA

Lectures on Physiology—Dr Henry Sewall, emeritus professor of medicine, University of Colorado School of Medicine, Denver, will give a series of six lectures for the San Diego Medical Lectureship Fund, San Diego, beginning Jan. 4, 1926 on Physiology," which will pertain chiefly to the metabolism of respiration and the endocrines The lectureship fund has been raised among members of the San Diego County Medical Society

"Dr." Kramolin Pleads Guilty—The Sacramento *Bee* October 15, relates that a 'Dr" William Kramolin pleaded guilty, October 14, to charges of embezzlement and theft of a platinum dish from the laboratory of the University of Nevada and that the penalty ranged from two to ten years in the state penitentiary Kramolin is said to have represented that he was connected with a local hospital and pretended that he was to perform experiments Previous reports state that Kramolin was arrested, December 30, 1921, on a charge of violating the medical practice act

Popular Medical Lectures.—Stanford University School of Medicine announces the forty-fourth course of popular medical lectures, to be given at Lane Hall on alternate Friday evenings Dr Harold K Faber will speak on "Dietary Peculiarities of Children," Jan 8, 1926, Dr Harry E Alderson, 'Skin Disturbances from Foods and Drugs," January 22, Dr Hans Lisser, "Ductless Glands and Obesity," February 5, Dr Philip K Brown, "Gastro-Intestinal Disturbances and Nutrition," February 19, Prof Ernest G Martin, Ph D, "Fatigue and Rest," March 5, and Dr George I Ebright, president, California State Board of Health, 'On the Prevention of Disease," March 19

COLORADO

Community Health Conference—Under the auspices of the University of Colorado, the Child Welfare Bureau, State Board of Health, State Tuberculosis Association, State Dental Association and the State Psychopathic Hospital, and with the cooperation of local physicians dentists and committees a community health conference was held, November 13, in Greeley, financed by the County Public Health Association and the Red Cross A complete history of each child patient was taken and physical examinations made Members of the staffs of the state institutions gave addresses in the evening on health problems The cooperating organizations had a schedule for other conferences to be held at Johnstown, New Raymer, Fort Lupton and Nunn the following week

CONNECTICUT

The Tuberculosis Death Rate—In announcing the annual sale of Christmas seals, the state department of health gives the average tuberculosis death rate in Connecticut by five-year periods for the last thirty years It was 171 4 per hundred thousand population for the period 1895-1899, and there was a gradual reduction to 95.4 for the period 1920-1924. Whereas tuberculosis formerly was "the captain of the Men of Death," its death rate in 1924, which was 81.4, was less than that for cancer, which was 104.2 and for pneumonia, which was 100.4.

GEORGIA

Increase in Death Rate.—The Department of Commerce anounces that the 1924 death rate for Georgia was 1,149 per 100,000 population as compared with 1,127 in 1923. The increase is accounted for largely by increases in the death rates from heart disease, pneumonia, whooping cough, measles and arthritis.

Society News.—Dr. Edward C. Davis, Atlanta, addressed the Fulton County Medical Society recently on "Medical Ethics," and Hon. Clark Howell on "A Layman's Point of View of the Medical Profession." Dr. Cyrus W. Strickler addressed the October meeting of the society on "Arteriosclerosis."——Dr. Charles H. Ferguson presented a case of Mongolian idiocy before the Thomas County Medical Society, October 15.——Dr. Charles E. Dowman addressed the Atlanta Neurological Society recently on "Typical and Atypical Facial Neuralgias."

Inadequate Funds for Health Work.—The Ware County Medical Society has passed a resolution requesting the governor to increase the appropriation for the state board of health for the next two years in case there is an extra session of the legislature. The state commissioner of health writes in the *Journal of the Medical Association of Georgia* that a new half million dollar tuberculosis sanatorium, for which the legislature did not increase the appropriation for maintenance for 1926 and allowed only $100,000 for 1927, will have to remain vacant next year and be maintained at about half capacity the following year. With an adequate appropriation, the new institution would have permitted the use of the old building for the care of negro patients. Another correspondent writes that the appropriation for health work remains the same as it has been for the last six years, that the appropriation of $35,000 a year for the school for the feebleminded at Gracewood is inadequate, that the free distribution of arsphenamin has been discontinued, and that the bill to make it lawful for counties to pay for gathering vital statistics failed to pass the legislature.

ILLINOIS

Conference on Heating the Home.—The National Warm Air Heating and Ventilating Association held a conference at the University of Illinois, Urbana, December 2, to discuss the results of years of research on the proper heating of the home as it applies to health. The research work has been conducted in a residence built by the association at Urbana.

Society Conducts Health Column.—The St. Clair County Medical Society voted unanimously, November 12, to cooperate with the East St. Louis *Journal* in conducting a daily health column. Articles will be prepared for publication in that newspaper by members of the medical society, and questions on health will be answered. A committee was appointed to decide on a policy with regard to the column. The members are Drs. Henry A. Cables, Royal Tharp and John H. Fulgham.

Warning—Hard Luck Story.—A man about 45 years of age, bald, heavy set, smooth faced and mild mannered, called on a physician in the vicinity of Mount Vernon, claiming to be traveling for a land company in New Orleans and to have an option on land in another part of the state. He is just waiting around to close the deal and so he ran down here to get his mail, leaving his baggage and other things at the hotel in a nearby town. He exhibits a large curved scar on the left side of his head and says that he was hurt elsewhere a few days ago. He anticipates moving "to this city shortly" and wants enough money to get back to "Decatur" to close the land deal the next day. He makes an appeal that is difficult to refuse, and in at least one case failed to return the money as he promised to do.

Chicago

Hospital News.—The American Hospital of Chicago, at Irving Park Boulevard and Broadway, has broken ground for the erection of a four-story, fireproof addition.

Regional Planning Association.—At the third annual meeting of the Chicago Regional Planning Association, December 2-3, *Hotel Sherman*, the Wednesday afternoon program was "Public Health," at which Senior Surgeon Claude C. Pierce, U. S. Public Health Service, presided and gave an address on "Coordinated Health Work in the Chicago Region." Among other speakers were Dr. Isaac D. Rawlings, state health officer; Dr. Cornelius A. Harper, state health officer of Wisconsin; Dr. William F. King, state health officer of Indiana; Dr. Herman N. Bundesen, city commissioner of health; Dr. William A. Evans, and Dr. Milton M. Portis.

Typhoid Fever in Chicago.—The Chicago Department of Health reports that there were seventy-nine true cases of typhoid fever in the city in the three months ending September 30, which is ten less than was reported in the corresponding quarter last year. Ten of these patients died, making a case mortality rate of about 16.4 per cent. Five of the fatal cases were apparently due to typhoid carriers. In all, the infections in thirty-eight of the cases reported were traced; thirty-one of them were apparently acquired out of town and twenty other cases are suspected of having been out of town infections. There were on record, September 30, in the Chicago Health Department, thirty-nine known typhoid carriers.

Society News.—Among others, Dr. William T. Belfield addressed the Chicago Urological Society, November 24, on "Pelvic Cellulitis in the Male."——Dr. Francis L. Lederer addressed the Chicago Society of Anesthetists, November 27, on "Impression of Europe."——The Illinois Society of Industrial Medicine and Surgery and the Chicago Society of Industrial Medicine and Surgery will hold a joint meeting, December 7-8, at the Great Northern Hotel. There will be a clinic at 9 o'clock the first day at St. Luke's Hospital, at the same hour the second day at the West Side Hospital, and in the afternoon at Cook County Hospital, and an informal banquet in the evening, to which the ladies are invited; $2.50 per plate.——Dr. Vittorio Putti, Bologna, Italy, held an informal clinic under the auspices of the Chicago Surgical Society at the Cook County Hospital, November 21.——Dr. Arthur Dean Bevan addressed the Chicago Medical Society, December 2, on "Ulcer and Carcinoma of the Stomach and Duodenum—Their Recognition and Surgical Management," and Dr. Karl A. Meyer, on "Complications of Peptic Ulcer and Their Surgical Treatment."——Dr. Alfred Lewy will address the Chicago Laryngological and Otological Society, December 7, Great Northern Hotel, on "Specimens of Ragweed of the Chicago Area," and Dr. Austin A. Hayden on "Cervical Emphysema Following Tonsillectomy."——The Chicago Surgical Society met, December 4, at the Cook County Hospital following a dinner and symposium at the University Club on "Carcinoma of the Large Bowel," participated in by Drs. Vernon C. David, Carl B. Davis and Arthur Dean Bevan.——Prof. L. Koeppe of the University of Halle will address the Chicago Ophthalmological Society, December 22, Hotel Sherman, on "The Importance of Einstein's Theory of Relativity and Gravitation for the Physiologic Color Perception of the Living Eye."——The next meeting of the Chicago Tuberculosis Society will be December 10, at the Brevoort Hotel. Dr. Allen Craig will discuss "Teaching of Tuberculosis for the Profession, Students and the Public," illustrated by moving pictures.

INDIANA

Mental Health Conference.—The tenth annual conference on mental health will be held in Indianapolis, December 7, under the auspices of the State Society for Mental Hygiene. The presiding officers at the various sessions will be H. W. Sherwood, state superintendent of public instruction; Samuel E. Smith, provost of Indiana University, and State Senator C. O. Holmes, Gary. The subjects for discussion include backward children in the public school, mental clinics, special classes for backward children and special training for teachers. Among the speakers will be Dr. Charles P. Emerson, dean, Indiana University School of Medicine; Dr. Charles Bernstein, superintendent, State School for the Feeble-Minded, Rome, N. Y., and Dr. Max A. Bahr, superintendent, Central Hospital for Insane.

Society News.—Elmer V. McCollum, Sc.D. of the Johns Hopkins University School of Hygiene and Public Health, addressed recently a joint meeting of the Indianapolis Medical Society, Indianapolis Dental Society, Indiana Dental School, Public Health Nursing Association, State School of Medicine and National Dairy Association.——Dr. Edward L. Keyes, professor of clinical surgery, department of urology, Cornell University School of Medicine, New York, recently addressed the Indianapolis Medical Society on "Renal and Ureteral Stones." Dr. Thomas B. Noble, Jr., addressed the society, October 27, on "Auricular Fibrillation in Toxic

Goiter," and Dr. Horace R. Allen on the "Treatment of Burns."——Members of the Seventh District Medical Society were entertained at a banquet by Dr. Simon P. Scherer at the Highland Sanatorium, Martinsville, October 28. Dr. Bernard J. Larkin was elected president of the society and Dr. Jacob K. Berman, secretary.

LOUISIANA

Personal.—Dr. Khurshedjee J. Rustomjee, assistant British malariologist for the Island of Ceylon, and Dr. Ralph K. Collins of the International Health Board, recently assigned to malaria control in Turkey, addressed the Shreveport Medical Society, Shreveport, November 3, and left for Jackson, Miss., the following day, on a tour of inspection of malaria control work.

Professor of Physiology Appointed.—The dean of Tulane University of Louisiana School of Medicine, New Orleans, announces the appointment of Henry Laurens, Ph.D., associate professor of physiology, Yale University School of Medicine, New Haven, Conn., as professor of physiology to succeed Dr. Walter E. Garrey, who accepted a position last spring at the Vanderbilt University School of Medicine, Nashville, Tenn.

MARYLAND

Award to Dr. Abel.—The Research Corporation of New York has selected Dr, John J. Abel, professor of pharmacology, Johns Hopkins University Medical Department, Baltimore, to receive a $2,500 award for outstanding contributions to science. With the award there is to be a plaque designed by an eminent sculptor.

Dinner to Dr. Dean Lewis.—A dinner in honor of Dr. Dean Lewis, recently appointed professor of surgery at Johns Hopkins and surgeon in chief to the Johns Hopkins Hospital, Baltimore, has been arranged for Jan. 22, 1926. The surgical alumni of Johns Hopkins and leading surgeons from other parts of the country have been invited. There will be a series of clinics, and in the course of these meetings a movement will be started to create an organization to be known as the Johns Hopkins Surgical Society.

Psychopathic Building Opened.—At the semiannual meeting of the Board of Mental Hygiene and the boards of managers of state hospitals for the insane and feebleminded at the state hospital, Crownsville, November 24, the Hugh Young Psychopathic Building was formally opened. Among others, Dr. Clarence Floyd Haviland, chairman, State Hospitals Commission of New York, and president of the American Psychiatric Association, spoke on "The Plan of Development of New York State Hospital." A testimonial was presented by Governor Ritchie to Dr. Young, who has served on the state lunacy commission for seventeen years.

Society News.—Dr. Haven Emerson, professor of public health administration, Columbia University College of Physicians and Surgeons, New York, addressed the Maryland Tuberculosis Association, November 6.——Dr. William H. Welch, director, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, addressed the New York Tuberculosis and Health Conference, Hotel Biltmore, New York, November 20, on the encroachment of the activities of public health officials on the private practice of physicians.——Dr. Arthur P. Herring, state commissioner of mental hygiene, and Dr. Robert P. Winterode, superintendent, Crownsville State Hospital, addressed members of the Social Service Conference who visited the hospital, November 20, on "The Development of State-Wide Mental Hygiene Clinics" and "The Development of This Hospital for the Negro Insane," respectively. The conference was in session at Annapolis, November 18-20.——Dr. Lewellys F. Barker addressed the Baltimore City Medical Society, November 20, on "What the Medical and Chirurgical Faculty Does for Its Members"; Dr. John R. Oliver, on "The Work of a Physician in the Baltimore Court House," and Dr. Charles R. Austrian, on "Some Vascular Episodes Simulating Acute Visceral Disease."——Dr. Alice Hamilton, assistant professor of industrial medicine, Harvard School of Public Health, Boston, gave one of the De Lamar Lectures, November 30, at the Johns Hopkins University School of Hygiene and Public Health on "The Present Status of Industrial Toxicology in the United States."

MASSACHUSETTS

Vaccinated Children Escape Smallpox.—A correspondent notes in the *Boston Medical and Surgical Journal* that, in the recent outbreak of smallpox in the St. Francis Orphanage, Woonsocket, in which there were 240 children, not one of the fourteen victims had even been vaccinated. No children who had ever been vaccinated contracted smallpox although they mingled freely with those affected.

Appointments at Tufts College Medical School.—According to the *Boston Medical and Surgical Journal*, Drs. Frederic L. Good and Alonzo K. Paine have been appointed associate professors of obstetrics at Tufts College Medical School, Boston; Dr. Frank H. Dunbar, assistant professor of pathology; Dr. Edward K. Ellis, assistant professor of ophthalmology; Drs. Edward J. Denning, John F. Fennessey, Joseph E. Hallisey and Joseph M. Lynch, assistant professors of theory and practice of medicine, and Dr. Edwin H. Place, assistant professor of pediatrics.

MICHIGAN

Society News.—Dr. Frederick M. Allen, director, Psychiatric Institute, Morristown, N. J., will address the Wayne County Medical Society, Detroit, December 7, on "Treatment in Pernicious Anemia."

Medical Examiners Reappointed.—Governor Groesbeck has reappointed the following members of the state board of registration in medicine; their terms will expire in 1929: Dr. George L. Lefevre, Sr., Muskegon; Dr. Albertus Nyland, Grand Rapids; Dr. Nelson McLaughlin, Detroit; Dr. Ray C. Stone, Battle Creek, and Dr. Guy L. Connor, Detroit.

Personal.—Dr. Lloyd B. Whitman has been appointed city physician of Ionia to succeed Dr. Wellington B. Huntley. ——Dr. Cyrenius G. Darling, president of the state medical association, addressed the Washtenaw County Medical Society, November 10, concerning his forty years' work in the practice of medicine. The society presented Dr. Darling with a bouquet of forty roses.

MISSOURI

Alumni Organize.—Graduates of the Ensworth Medical College organized an alumni association at a meeting at Kansas City, October 7, electing Dr. Charles G. Geiger, St. Joseph, president; Dr. Joseph H. Buckles, Kansas City, Kan., vice president, and Dr. Charles W. Fassett, 115 East Thirty-First Street, Kansas City, Mo., secretary-treasurer. All professors and graduates of the Ensworth, Central and Northwestern colleges of St. Joseph are requested to send their names to the secretary for further information.

The Adcox Confession (Continued).—Arriving in San Francisco, Adcox says in the St. Louis *Star*, he went to the home of the Rev. Dr. Francis R. Cutting in Oakland, to have his fortune told. When the "Reverend Doctor" recovered from his trance, he told Adcox that he should be a missionary and that it would require only a few minutes to take the examination. Five questions were proposed, Adcox's answers being (1) Absolutely, (2) Positively, (3) Undoubtedly, (4) Surely, and (5) Of course. Cutting informed Adcox that he made a passing grade and prepared a "Certificate of Ordination," dated back to Jan. 10, 1909. The certificate, which Adcox still has in his possession, sets forth that he had been ordained by the First Spiritual Church of the City and County of San Francisco by the authority vested in the church by the state of California under Charter 55543, and "authorizes" him "to solemnize marriages, officiate at funerals and perform all other duties." Adcox was given also a "salutem," authorizing him to establish branch churches and missions and to collect funds for their upkeep. Cutting told Adcox that he could obtain certificates for others at $10 each, perhaps not knowing that an "old gentleman" had already offered Adcox $500 for such a degree. Returning to St. Louis, Adcox found a young man "almost desperate" to see him. His story was that he had applied for a license to practice in Minnesota but that he needed two years of premedical training and would give Adcox $600 to fix him up. Adcox telephoned to one of his "assistants," who obtained a certificate guaranteed to stand the "acid test." The applicant hastened to Minneapolis, but the state board refused to accept the certificate. The "assistant" could not, of course, make good his guarantee and would not return the money. The fellow had a wife and two children and was broke. Adcox says he gave him a check for $600.

Helmuth P. Holler, who owned the "Oriental University" in Washington, D. C., and who is said to have sold diplomas conferring more than 600 different degrees, made a contract with Adcox, but transacted little business, as all applicants for dental, legal and other degrees were turned over to a man "who was a magician at changing the worst sort of raw material into a dentist or a lawyer." Adcox says he knows of lawyers and dentists in St. Louis, Boston, New York and elsewhere who entered their professions in this manner. It seemed now that every chauffeur, street car conductor, photographer and milk wagon driver who met Adcox wanted a diploma. A St. Louis physician, "high in his profession," brought his office girl to Adcox, to whom he offered $1,000 to get her a medical degree. Although Adcox says he refused this offer, he admits that he helped a few women to obtain degrees.

MONTANA

Personal.—Dr. Hazel D. Bonness, Helena, has been elected president of the Montana State Conference of Social and Health Work.——Dr. Ernest B. Downs, formerly connected with the U. S. Indian Service, at the Fort Belknap Agency, Harlem, has resigned and gone to Danville, Ill., to engage in private practice.

NEBRASKA

Another Christmas Gift.—The Omaha-Douglas County Medical Society has sent in 110 subscriptions to *Hygeia* to be presented to the Douglas County schools.

NEW YORK

Society News.—Dr. William G. Turner, orthopedic surgeon to the Royal Victoria Hospital, Montreal, Canada, addressed the Medical Society of the County of Essex, Fort Henry, on surgical conditions of the knee.

Dr. Albritton Appointed Professor of Physiology.—The Siamese government has completed negotiations for Dr. Errett C. Albritton, Buffalo, as professor of physiology at the Chulalongkorn University at Bangkok. Dr. Albritton is a graduate of the University of Missouri and of the Medical Department of Johns Hopkins University, Baltimore, and during 1923 and 1924 was a fellow in medicine of the National Research Council, carrying on his work at Ohio State University, Columbus.

Personal.—Dr. H. J. Hansen of the National Board of Health of Denmark visited the New York State Health Department, October 13-17, to study methods in use in the Division of Vital Statistics.——The state commissioner of health has appointed Drs. George W. Kosmak and Frederick W. Rice, New York, as regional consultants in obstetrics, and Drs. William J. Orr, Buffalo, Arthur W. Benson, Troy, and Hugh Chaplin, Gaylord W. Graves, William R. May and Herbert B. Wilcox, New York, as regional consultants in pediatrics.——Dr. Royal S. Copeland addressed the Homestead Associations at New Orleans on public health work on the occasion of their fifty-second anniversary.

New York City

Third Harvey Lecture.—Dr. Warren H. Lewis, professor of physiologic anatomy, Johns Hopkins University Medical Department, Baltimore, will deliver the third Harvey Society Lecture at the New York Academy of Medicine, December 12, 8:30. The subject will be "On the Origin of Macrophages and Epitheloid Cells from Mononuclear Blood Cells."

Joint Meeting on Trachoma.—The National Committee for the Prevention of Blindness and the Eastern Association of Indian Affairs, Inc., held a joint meeting at the Russell Sage Foundation Building, December 2. The subject was "The Campaign Against Trachoma Among the Indians." Dr. Anthony J. Lanza, director, National Health Council, presided.

Dr. Fox Appointed Professor of Dermatology.—The appointment of Dr. Howard Fox as professor of dermatology and syphilology at New York University and Bellevue Hospital Medical College was announced, November 28. Dr. Fox, who will succeed the late Dr. William B. Trimble, is attending dermatologist at the Willard Parker, Harlem, Riverside and Lenox Hill hospitals.

Dinner to Dr. Dannreuther.—Friends of Dr. Walter T. Dannreuther, professor of gynecology, New York Post-Graduate Hospital, gave a dinner in his honor, November 23, at the Ritz-Carlton; Dr. Charles Gordon Heyd presided, and Drs. John O. Polak and Samuel W. Bandler gave addresses. Dr. Dannreuther is to be head of the department of gynecology at the Cranleigh Hospital, which is now under construction.

Illegal Practitioner Held.—"Dr. Samuel Marder" was tried in the magistrate's court at Far Rockaway, October 15, for practicing medicine without a license and held in $1,000 bail for trial in the court of special sessions, Queens County. Marder is said to have responded to a call for a physician and to have sent the patient's husband a bill for $5 for "professional services." There is a Samuel A. Marder licensed as a chiropodist in the county; he is not a doctor of medicine.

Annual Dinner of Medical Club.—The Baltimore Medical Club, New York, made up of graduates of Johns Hopkins University Medical Department and other medical schools of Baltimore who are practicing in New York, will hold its annual dinner, December 5, at the Waldorf-Astoria.

Hospital News.—The alumni of the Hospital for the Relief of the Ruptured and Crippled held its thirteenth annual reunion, November 23-24; the occasion was attended by clinics and a scientific session and a dinner at the Columbia University Club.——Plans have been completed for the new $500,000 pathologic laboratory to be erected by the city on the grounds of Kings County Hospital. The new laboratory is intended to serve the Brooklyn Medical Center.——St. Vincent's Hospital will shortly launch a campaign to raise $1,000,000.

Presbyterian Hospital Building Fund.—The president of the Presbyterian Hospital writes in the New York *Times* that $700,000 must be subscribed before the New Year to complete the hospital's building fund of $7,000,000. Following the appeal made to the public last spring for $4,500,000, gifts have been received ranging from 25 cents to $500,000 from people in every walk of life; the student nurses and alumni of the Presbyterian Hospital School of Nursing obtained $541,335; a committee of women obtained $341,000, and residents in the vicinity of the new hospital center $156,539, including a gift of $60,000 from 15,000 postal employees. The structural steel work on the new hospital building at One Hundred and Sixty-Eighth Street and Broadway is almost completed. The central group of buildings, in addition to housing the Presbyterian Hospital, will include the College of Physicians and Surgeons of Columbia University, Sloane Hospital for Women and the Vanderbilt Clinic, and will be ready for occupancy in 1927.

NORTH CAROLINA

Personal.—Dr. Watson S. Rankin, director of the Hospitalization and Orphanage Sections of the Duke Endowment, will move to Charlotte, January 1, to establish headquarters in that city for this work.——Dr. Eugene L. Swan, of the American Social Hygiene Association, recently delivered a series of lectures on "The Sex Factor in Human Life" at the University of North Carolina, Chapel Hill, and the North Carolina State College, Raleigh.

Society News.—Members of the Buncombe County Medical Society recently tendered a complimentary dinner to Dr. Roswell E. Flack, Asheville, prior to his leaving for Memphis, Tenn., to engage in practice in that city.——At the recent meeting of the Second District Medical Society, Washington, Dr. Robert Du Val Jones, New Bern, was elected president. Dr. William de B. MacNider, president of the state medical society, gave an address.——The physicians of Durham have recently announced an increase of 50 per cent. in their visiting fees and that calls after 8 p. m. will be charged for at an added rate.——Dr. Annie L. Alexander, Charlotte, addressed the Women's Professional Club of that city, November 26, at the annual dinner on "Health for the Business Woman."

OHIO

American Field Service Fellowships.—The *Cincinnati Journal of Medicine* reports that the American Field Fellowships for French Universities as administered by the Institute of International Education are on file in the office of the dean of the University of Cincinnati College of Medicine, where applications may be obtained. The fellowships of $1,200 are open to men only and have a time limit of one year, but renewal for a second year may be secured. Payments are made quarterly and steamer fare is provided against sailing in June, 1926. Applications must be sent before December 15.

PENNSYLVANIA

Society News.—Dr. Lewellys F. Barker, professor emeritus of medicine, Johns Hopkins University Medical Department, Baltimore, addressed the Ninth Censorial District of the Medical Society of the State of Pennsylvania, November 17, at the Carnegie Library, Pittsburgh, on "Health and Life."——Earl C. Rice, D.D.S., addressed the Montgomery County Medical Society, Haverford, November 9, on "Dental Conditions in Their Relation to Medicine."——Attorney John R. Geyer addressed the October meeting of the Dauphin County Medical Society on "The Doctor in Court."——The Fayette County Medical Society held its annual clinic in October, which was attended by more than 100 physicians and was addressed by Dr. David Riesman and Dr. George P. Muller of the medical and surgical staff, respectively, of the University Hospital, Philadelphia.——Dr. John A. Kolmer addressed the Lycoming County Medical Society on "Scarlet Fever, the Dick Test, Active Immunization and the Serum Treatment."

Philadelphia

Sesqui-Centennial International Exposition.—Mayor Kendrick issued a statement, November 23, outlining the plan of the Sesqui-Centennial International Exposition, which will open in League Island Park, June 1, 1926, to celebrate the one hundred and fiftieth anniversary of the Declaration of Independence. The exposition space already definitely planned exceeds by more than a half million square feet the area available in the Paris Exposition of 1900. There will be three great exposition palaces in the midst of a 2,000 acre tract, a stadium accommodating 150,000 and an auditorium seating 20,000. At least twenty other special buildings are being planned by governmental, state and commercial agencies. Among the nations of the world that will be represented officially or through industries or citizens are France, England, Italy, Spain, Belgium, Holland, Sweden, Norway, Denmark, Poland, Switzerland, Bulgaria, Roumania, Czechoslovakia, Jugoslavia and several Asiatic and South American nations. The lighting will be sensational in its scope and splendor. An auroral display representing the greatest aggregation of light ever concentrated in one spot will be visible as far as New York and miles out to sea. A Liberty Bell, the height of a six-story building, containing 20,000 lights, will span Broad Street. The president of the United States will speak, July 3-4. There will be an outstanding list of events, conventions, displays and concessions. The U. S. government, through various departments, will install a great variety of exhibitions (The Journal, October 3, p. 1070, and October 17, p. 1323).

TENNESSEE

Society News.—At the recent meeting of the Middle Tennessee Medical Association, Fayetteville, Dr. William S. Rude, Ridgetop, was elected president; Dr. Thomas D. McKinney, Nashville, vice president, and Dr. Sam P. Bailey, Nashville, secretary-treasurer, reelected. Among the speakers at the meeting was Dr. William D. Haggard, Nashville, President of the American Medical Association. The Lincoln County Medical Association gave a banquet in honor of the meeting.

UTAH

Warning—Microscopes Renovated.—A correspondent writes that "Major Raymond de Cercy, Chevalier of the Legion of Honor, civil engineer, A.M.P.P.E.C., of 1728 Eleventh Avenue, New York, 1021 Lake View Boulevard, Seattle, 966 Market Street, San Francisco, and Long Beach," has been calling on physicians in the West for the purpose of renovating their microscopes. He has a pocketful of references, plenty of diamonds, a cane and an engaging manner. "Major de Cercy" usually takes the microscope without giving an estimate of the cost and returns next day with the instrument and a bill for from $40 to $60; he then proceeds to justify the bill by stating that about everything about the microscope had to be replaced. He collects, and the victim wonders what it is all about. Investigation shows, the correspondent says, that a local technician would have attended to the cleaning with probably no replacements at all for not more than $5.

WEST VIRGINIA

New Health Officer.—The Kanawha County Court issued an order, November 14, establishing a "modern" county health department, and appointed Dr. Roy Ray of Clendenin full-time county health officer. The court appropriated $8,650 for this purpose and authorized Dr. Ray to employ assistants. The state health department will also contribute $600 semiannually. The health officer, in addition to general county health work, will care for patients in the county infirmary and county jail.

CANADA

Public Instruction in Health.—The executive committee of the Canadian Medical Association reported at the last annual meeting that a "public enlightenment program" had been inaugurated and a lay editor engaged to work with the publicity committee. The newspapers of Canada were offered one article a week at a contract price ranging from $30 to $120 for the year. The editor agreed to accept half of the gross proceeds for her services. At the annual meeting of the association, the executive committee was authorized to continue to employ the editor and to pay her a salary of $1,000 a year and to give a percentage of receipts above that amount. The new chairman of the publicity committee, Dr. John G. Fitzgerald, was authorized to add to his committee such personnel as he desires to insure the success of that department.

Society News.—About 100 physicians and their wives from Lincoln, Welland, Wentworth, Halton and Haldimand counties attended the annual meeting of District No. 4 of the Ontario Medical Association, at Niagara Falls, recently. The day was devoted to clinical work at the General Hospital, to the presentation of cases and discussions. At the banquet at the Clifton Hotel, the president of the Ontario Medical Association, Dr. John A. MacGregor, and the secretary, Dr. Thomas C. Routley, gave addresses.——Dr. George E. Wilson, Toronto, recently addressed the Hastings County Medical Society on "Surgical Emergencies."——Dr. William E. Ogden, Toronto, addressed the Victoria County Medical Society, Lindsay, on "Too Late Versus Preclinical Diagnosis of Tuberculosis."——Dr. Hamnet A. Dixon, Toronto, addressed the Peterborough County Medical Society on "Common Skin Affections."

GENERAL

American Board of Otolaryngology.—There were 143 applicants examined by this board, October 19, at the examination held at the Cook County Hospital, Chicago, all of whom, except twenty-three, passed. The next examination will be in Dallas, Texas, April 19, 1926, for which applications may be secured from the secretary, Dr. Hanau W. Loeb, 1402 South Grand Boulevard, St. Louis.

Tax on Medicinal Alcohol.—As part of its program of tax reduction, the House ways and means committee has agreed to recommend the repeal of the war tax on medicinal alcohol. The repeal of this tax has been urged for years by retail druggists, who insist that it is an unreasonable tax on their business. The committee has recommended that the present tax of $1.10 per gallon be reduced to fifty-five cents per gallon, beginning Jan. 1, 1927, and that the remaining tax of fifty-five cents be eliminated, beginning Jan. 1, 1928. Fixing an advanced date for the reduction and final elimination of this tax will permit the drug trade to dispose of their present inventories of drugs. Many druggists have large quantities of drugs purchased under the tax of $1.10 per gallon.

Smithsonian Institution Seeks Larger Endowment.—The regents of the Smithsonian Institution, Washington, D. C., appealed to the public, November 23, for $10,000,000 for endowment. Contrary to a general opinion, the Smithsonian Institution is not a government bureau, but was privately founded and endowed, and is privately directed and financed. The institution is unable to undertake sixteen major projects in fundamental research because of a lack of funds. The institution was founded in 1846, since when its initial endowment has only doubled. Among the projects that will be carried out with the aid of a larger endowment are researches in paleontology, studies on world weather, the genesis of minerals and studies on five major groups of vertebrates.

Campaign for Physicians' Home. — At the ceremony of launching the campaign for endowment for The Physicians' Home, Inc., at the Waldorf-Astoria, New York, November 23, a number of substantial donations were received. Noted speakers outlined the purposes of the campaign. Samuel Untemeyer said, among other things:

> Above and beyond all professions and occupations, and quite in a class by itself, stands the physician's as the emblem and personification of a life dedicated to public service in its highest sense. In that respect the ethics and practices of your great profession are unique. From the obscure, patient, overworked country doctor, who toils at all hours by day and night relieving suffering and ministering alike to the poor and the rich, to the men who have climbed to the top and have attained national and international fame, "service" has been the keynote of their lives. It is no exaggeration to say that fully one half of their professional lives are devoted to public and charity work. . . . To your everlasting credit be it said that no man can attain the highest professional eminence who does not participate in this service. I believe that there will be a quick and generous response to this appeal. To think otherwise would be to lose one's faith in the sense of justice of our people.

Among the other speakers were Congressman John J. Kindred, Rabbi Israel Goldstein, Dr. Walter P. Bowers, editor, *Boston Medical and Surgical Journal*, Dr. William H. Diefenbach, Mr. Don C. Seitz of the New York *World*, and Dr. Robert T. Morris, president of the Physicians' Home. Contributions should be forwarded to the headquarters office in the *Times* Building, Forty-Second and Broadway, New York.

News of Epidemics.—The epidemic of scarlet fever at Elgin, Ill., November 17, amounted to 96 cases; children under 16 years of age were forbidden to attend public meetings.——Public meeting places were closed at Colon, Mich., early this month to prevent the spread of a scarlet fever epidemic.——The health commissioner of Baltimore issued a warning November 15 about measles, mumps and chickenpox, which in the previous week were responsible for 252 cases of sickness as compared with 44 during the corresponding week last year.——One hundred senior high school pupils at Clinton, Ind., were recently ordered to be vaccinated or stay away from school on account of several new cases of smallpox in the city; all except one responded to the warning. Among junior high school pupils, all but four among 250 ordered vaccinated complied.——The board of health of Comanche, Iowa, has placed a ban on all public gatherings and closed the schools on account of a diphtheria epidemic; there have been several fatal cases.——The Hinchman School near Merchantville, N. J., was closed by the state board of health, November 19, on account of an epidemic of scarlet fever.——Four school children have died of diphtheria in Perth Amboy, N. J., since the opening of schools. There had been a total of twenty-five cases, November 17.——Twenty-five cases of typhoid fever in the vicinity of Delavan, Emden and Lincoln, Ill., were reported, November 23, as having been traced to a banquet at Emden. Every patient attended the banquet and all the victims but two were women.——The seventh ward schools of Greensburg, Pa., were recently closed on account of an outbreak of five cases of scarlet fever in that city.

LATIN AMERICA

Personal.—Dr. F. de Magalhães was the principal speaker at the recent unveiling of the bust of Pasteur, at the head of Pasteur Avenue, Rio de Janeiro, presented by the Sociedade de Medicina e Cirurgia of Rio in the name of the physicians of Brazil.——Dr. Gastão Guimarães is in charge of the newly completed model emergency hospital at Rio.——The *Brazil Medico* states that Dr. Afranio Amaral, formerly head of the Butantan Institute, has been requested by Harvard University to organize the laboratory for research on animal venoms there.——Dr. Gavião Gonzaga has left Rio for New York on a mission from the public health service. He intends to study at the Rockefeller Institute at New York.

FOREIGN

Vienna Training School for Midwives to be Closed.—The *Wiener klinische Wochenschrift* states that, owing to the surplus of midwives in Vienna, the school will be closed for a year after the close of the present course. The death of the former director, Dr. Piskacek, and the new regulations as to the requirements for candidates influenced the decision.

Personal.—Dr. Cardenal, Barcelona, has completed fifty years of professional service, and a series of celebrations have been held by his friends and pupils in the university halls and all the hospitals in which he has operated or officiated. The city council joined in the celebration by donating 6,000 pesos for a traveling fellowship in his honor.——Mr. James Sherren delivered the Bradshaw Lecture before the Royal College of Surgeons, England, November 11, on "Gastrojejunostomy," and Prof. William Wright the Thomas Vickary Lecture, November 18, on "The Medieval Conception of the Anatomy and Physiology of the Central Nervous System."——The Jubilee Committee, Institute for the Study of the Brain, Leningrad, arranged for an official celebration of Professor Bechtereff's fortieth year in scientific work. The celebration was followed by a series of meetings of various scientific societies.——Dr. Edward M. Merrins has retired from the editorship of the *China Medical Journal.*——Dr. R. Magnus, professor of pharmacology at Utrecht, delivered the Croonian Lecture at the College of Physicians, London, in October. His subject was "The Influence of Unconscious Reflexes on Movement and Attitude." The Baly medal was presented to him at the same time.——Dr. E. Baur, Berlin, is the president of the German Society for Study of Heredity and of the executive committee in charge of arrangements for the Fifth International Congress for Research on Heredity, which is to meet at Berlin in September, 1927.——Dr. C. Chagas, chief of the Brazil public health service, was presented with the honorary gold medal of the Hamburg medical faculty when he spoke recently at the Institute for Tropical Diseases on "Chagas' Disease: Brazilian Trypanosomiasis." He delivered a similar address before the Berlin Medical Society.——Dr. Cousot, Dinant, has been elected president of the Académie royale de médecine of Belgium for 1926, and Drs. Gallemaerts and Fredericq, vice presidents.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 14, 1925.

A Memorial to John Irvine Hunter

A memorial to the boy anatomist and genius John Irvine Hunter, whose untimely death was a tragedy for science, has been arranged in Australia. A fund has been subscribed, with six objects. The first is to have a portrait of Hunter painted which is to be displayed in the great hall of the University of Sydney. The second is to place a bust of Hunter in the medical school of the university. The third is to establish an annual oration on some subject embodying the results of original thought research, and award a medal. The fourth is to institute a library to contain all current medical, scientific and clinical literature and standard works of reference in each branch of medicine. The fifth is to establish a laboratory for clinical research, to be known as the John Irvine Hunter Research Laboratory. The New South Wales government is to be requested to provide the building, while its endowment and equipment will be a charge on the memorial fund. Finally, it is proposed that annual scholarships will be offered to research workers in the laboratory. They will be encouraged to focus their attention on the diseases commonly encountered in Australia, and especially those affecting children.

Unfit Aliens

An official return of aliens of the three months ending in September shows:

	1925	1924
Landed	153,632	164,131
Embarked	166,989	175,820
Refused leave to land	592	611

The figures for the nine months ending in September were:

	1925	1924
Landed	316,615	321,448
Embarked	305,920	311,562
Refused leave to land	1,873	1,827

In a new journal, the *Annals of Eugenics*, Prof. Karl Pearson and Miss Margaret Moul give the results of examination of Russian and Polish Jewish child immigrants into this country. These were not selected because they were Jews, but because they formed a large body which could easily be examined. The investigators find that on an average this alien Jewish population is somewhat inferior physically and mentally to the native population, but it is not so markedly inferior as some who want to stop all immigration are inclined to assert. They admit that some of these alien children from the academic standpoint have done brilliantly; whether they have the staying powers of the native race is another question. They recommend a standard for immigrants 25 per cent. higher than the mental and physical averages of the native population, below which none should be allowed to enter. They state that there is no evidence that a lessening of the aliens' poverty, an improvement in their food, or an advance in their cleanliness will substantially alter their average grade of intelligence and, with it, their outlook on life. They say that the immigrant should be judged by what he is when he arrives and rejected or accepted according to this; and that it is idle to argue that his intelligence will be modified—any more than the color of his hair—by residence in our country. In estimating intelligence, they do not make any allowance for the fact that the alien is somewhat handicapped immediately on arriving in a strange country by the effects of the oppression from which he has fled. As to the inferiority of the Jews to the native population, there is strong evidence to the contrary in the success of the Jews who have arrived young in this country and especially in those of the second generation. Not only in commerce but also in science and art the Jew has shown here, as in other countries, remarkable ability. The race that can claim mental superiority over him is yet to be produced.

Typhoid Outbreak Due to a Carrier

An outbreak of typhoid in Streatham (Southwest London) has been traced to a milkman who acted as a carrier. So far there have been twenty-seven affected—twenty women, six children and a youth of 17—with two deaths. Most of the persons attacked are members of a local Baptist chapel and live within half a mile of it. The explanation is that the patients are customers of a member of the congregation who keeps a dairy shop. Three weeks ago the health officer was able to trace the infection of the milk supply, but how it became affected at first baffled investigation. It was ascertained that the dairyman obtained his supplies from a larger firm in the district, which, in turn, received the milk from various farms in Surrey, Sussex and Kent. Protracted bacteriologic tests of the farm equipment, the cattle, the dairymaids and other workers all gave negative results, and both at the farm and at the shops it was found that the precautionary measures for cleanliness and sterilization could not be better. Attention was therefore turned on the persons engaged in distributing the milk. It was then discovered that a man so employed was a carrier of typhoid, though, as far as could be ascertained, he never had the disease and was perfectly healthy. He has been sent to hospital for treatment. There is no legal provision enabling a typhoid carrier to be debarred from undertaking what occupation he pleases, but the local health authority has power to grant him an allowance making it unnecessary for him to depend on employment.

The Certification of Insanity

Sir Maurice Craig, physician for and lecturer on psychologic medicine at Guy's Hospital, gave important evidence at a sitting of the royal commission on lunacy. He said that no branch of medicine had been so trammeled by legal enactments as psychologic medicine, and that as a result its progress had been slow, and many physicians were shy of taking it up. In the certification of persons of unsound mind an obligation that had nothing to do with medicine had been placed on physicians by the legislature. The definition of insanity in the lunacy acts frightened a large number from undertaking the care of early cases. It was not surprising that physicians in increasing numbers were refusing to sign certificates for recent cases on the ground that they do not understand what legal insanity means. The lunacy acts of 1890 and 1891 were intended to protect the liberty of the subject. In practice they had interfered with the liberty of many mentally sick persons who were capable of using their liberty properly. Throughout the acts, emphasis was laid on the legal aspect, and the medical treatment took a secondary place. Certification, in addition to acting as a deterrent to treatment, brought into the lives of those who had been subjected to it the feeling that they were in some way different from their fellow men, and from that feeling they might never be able to free themselves, even when restored to health. Experience had taught him that the harm done by certifying patients in the early stages of insanity far outweighed any advantages. If certification was done away with, the whole outlook of psychologic medicine would be changed, for it would then come into line with the treatment of physical disease. If certification was abolished, he thought that the number of willing patients would steadily increase. Provision for their treatment should be made in general hospitals or clinics which were separate from and not in the grounds of mental hospitals where certified patients were taken. There were, however, patients whose behavior made it impossible for them to reside in an ordinary hospital, and for this reason special hospitals of the type of the Maudsley Hospital would be necessary. The unwilling patient would have to continue to be treated in psychopathic hospitals under some form of provisional notification or certification. Willing patients should be able to go to licensed houses for treatment on their own written request. Legislation should be passed to allow the treatment of nonvolitional or passive patients on notification only, and of the unwilling patients by some form of provisional certification. With regard to the treatment of patients who could pay, willing and passive ones should be allowed to go to nursing homes or to the houses of physicians. He was in complete disagreement with the opinion that private persons should not be permitted to take for gain patients suffering from mental disorder. Outpatient clinics for mental patients should be available at all hospitals. He thought the best system was that which existed at Guy's Hospital, where there was one neurologic department attended by all patients, whatever their nervous complaint. Where no hospital was available, a special clinic should be established. Turning to the legal side, he said that the actions brought against physicians had caused great unrest in the medical profession. Physicians did not want their time taken up in this way, even if they made a successful defense. They wanted protection against the actions themselves.

The chairman said that the commission was sympathetic toward the aim of restoring confidence in the medical profession in discharging a difficult duty, but the question of the measures by which this could be done was difficult.

The Irresistible Impulse as a Defense for Murder

In the case of a youth of 19, the defense of irresistible impulse for a murder committed under peculiar circumstances failed. He had borne an excellent character and, according to the evidence, was of an affectionate disposition and a loving son. Two years ago an intimacy began with his uncle's wife, a woman whose mother was a Eurasian, and he came under her domination. She was a fascinating woman, but of somewhat violent disposition, and quarreled with her husband a good deal. The woman thought she was pregnant by the youth and they discussed a "way out." Eventually at her request he strangled her with his necktie, in a wood. He was convicted of murder. In the court of criminal appeal his counsel complained that the judge at the trial had failed to direct the jury that a person charged with a criminal offense was irresponsible if he committed the act under an impulse which he could not resist by reason of disease of mind. In giving judgment, the lord chief justice said that it had been suggested to medical witnesses at the trial that when the woman asked the youth to strangle her he was overcome and thereupon lost his conscious mind and his subconscious mind took control. The jury came to the conclusion, as it could not fail to do, that he was guilty of murder. The judge fully and clearly explained the law, but it was said that he misdirected the jury by not directing that "a person charged with a criminal offense was irresponsible if he committed the act under an impulse which, by reason of mental disease, he was in substance deprived of any power to resist." In other words, the complaint was that the judge did not tell the jury that something was the law which was not the law. The theory advanced was the fantastic one of uncontrollable impulse, which, if it became part of the criminal law, would be merely subversive. It is to be hoped that the time is far distant when it will be part of the criminal law. The defense of insanity in the present case, as in so many cases, was merely nonsense. The appeal was dismissed.

PARIS

(From Our Regular Correspondent)

Nov. 10, 1925.

Nervous Diseases of Industrial Origin

At the International Congress on Industrial Accidents, recently held in Paris, M. Crouzon spoke on nervous diseases of industrial origin. He first presented an etiologic and clinical study separated into two divisions and several subdivisions: 1. Nervous diseases of exclusively or essentially occupational origin, including those due to occupational intoxication: chronic lead poisoning; mercurial poisoning; arsenical poisoning; carbon monoxid poisoning; poisoning by carbon disulphid; poisoning by hydrocarbons; poisoning by chlorinated carbon compounds used as solvents of rubber and of certain ingredients of varnishes (manufacture of artificial pearls); finally, more rarely, poisoning by phosphorus, zinc, tin, copper, industrial alcoholism, hydrogen sulphid, picric acid, tobacco, etc. Essentially occupational diseases should be considered also: caisson disease, electric shock, and accidents resulting from work under high temperature. There are also nervous affections of industrial origin produced by indirect causes, such as the renal and visceral disorders of lead poisoning. 2. Nervous diseases occasionally of industrial origin, such as occur in miners, water carriers, writers, violinists, etc. The author points out that, while, from the point of view of pathology, the poisons may affect the brain, the medulla or the nerves, clinically it is chiefly the peripheral nerves that are affected. He emphasizes the insufficiency of the act of Oct. 25, 1919, which deals only with paralysis of the extensors and with hysteria resulting from lead poisoning; and with trembling and paralysis due to mercurial poisoning.

The International League Against Venereal Disease

The governing council of the Union internationale contre le péril vénérien, which comprises delegates from thirty-three nations and the headquarters of which are at the Hôtel des sociétés savantes in Paris, convened, October 3-9, at the Faculté de médecine of Paris, under the chairmanship of its president, M. A. Bayet of Brussels. The following countries were represented: Argentina, Belgium, Brazil, Bulgaria, China, Costa Rica, Denmark, France, Germany, Great Britain, Guatemala, Hungary, Italy, Japan, Jugoslavia, Netherlands, Poland, Spain, Switzerland, the United States and Venezuela. The resolutions presented by the various committees were concerned primarily with the surveillance of emigrants, who, when affected with venereal disease, are usually ignorant of its gravity and of the menace that they present to others. The governing council requests that, before their departure, emigrants be instructed in such matters by active propaganda (public press, posters, motion pictures, leaflets) to be carried out by the various national societies which are constituent members of the international league. Cases of venereal disease should be discovered in the same manner as other contagious diseases, and persons affected with contagious venereal disease should not be allowed to embark unless the boat furnishes adequate medical treatment. The general secretary must endeavor to see to it that officials will admit only those immigrants who are in a condition compatible with the program of the international league.

Each national society will continue in an energetic manner to look after the prophylactic, sanitary and moral education of emigrants, supplying them with pamphlets printed in their native languages, giving a list of centers where they may obtain treatment. Certain countries, particularly France and the United States, refuse admission to immigrants with venereal disease. The general adoption of such restrictions would no doubt induce prospective emigrants to submit to treatment. The general secretariat, during 1926, might try to ascertain the best means of giving emigrants the necessary moral and sanitary aid.

Relative to the surveillance of boundaries between countries, the governing council solicits from Spain, Portugal, Belgium, Switzerland, Hungary, and from the countries of South America that have joined the international league, an inquiry into: (1) the regular movement of workmen who are employed by the day, or for a definite time, in the neighboring countries; (2) the incidence of venereal disease among such workmen, and (3) the conditions on which authorization to cross the frontiers depends. Without waiting for the completion of this inquiry, the national societies will undertake at once a moral and prophylactic propaganda among the population that is constantly shifting back and forth along the frontiers.

The surveillance of the seaports is another important task. An endeavor should be made to interest the shipowners in the crusade against venereal disease, for great benefit would thereby accrue to the sailors. The question of the treatment of sailors on board vessels lacking medical service should be studied and solved. Likewise, the various national societies composing the league should provide for sailors, on their arrival and stay in port, suitable instruction pertaining to sanitation, prophylaxis and morals, by means of the public press, lectures, leaflets, posters, etc. A complete list of the dispensaries to be found in the various ports of the world should be prepared and published and furnished to the sailors, in order to facilitate continuous treatment. The aid of shipowners should be solicited with a view to the creation in all the ports of a permanent information bureau where sailors could secure reliable information in regard to the therapeutic resources of the city and where they could be warned against advertising charlatans.

There remains the problem of prostitution. Whereas therapeutic sterilization of patients affected with venereal disease is one of the principal means of bringing about the suppression of syphilis and the diminution of other venereal diseases, and whereas the reglementation of prostitution—that is, its attempted regulation by registration, periodic inspection and police supervision—has, at no time and in no country, enabled us to lessen materially the damage caused by venereal disease, while, on the other hand, such reglementation is repugnant to a sense of justice and to all ideas of social decency, the governing council recommends: (1) the suppression of the reglementation of prostitution; (2) the application of measures directed toward the people as a whole and based on the broadest conception of the principle of individual liberty; (3) the adoption by the governments of measures designed to suppress the social causes which, in the last analysis, provoke and favor the spread of prostitution; (4) enlightenment of the people as to the dangers of venereal infection, and the providing of treatment (gratuitous if necessary) for every person affected, in accordance with his needs, and (5) the suppression by measures adapted to the customs and habits of each country of (*a*) solicitation on public streets; (*b*) enticing to vice, and, particularly, corruption of the young by any means whatever, though not directly obscene; (*c*) attempts to lead astray or lure away persons (even though of age and readily consenting) with a view to subjecting them to prostitution; (*d*) the admission by any person by any means whatever that he (or she) will prostitute himself (or herself) or that he or she favors the prostitution of others, and (*e*) advertisements of drugs designed to cure venereal disease, and, in a general way, of all publicity that is not of a medical character.

The governing council recommends further that a special appeal be made to the medical profession, asking its full and complete cooperation with respect to the advice given patients affected with venereal disease.

GENEVA

(From Our Regular Correspondent)

Nov. 10, 1925.

Control of Vaccines and Serums

At the recent meeting of the Swiss cantonal directors of sanitary affairs, the necessity of government control of serums and vaccines was recognized. The use of these products has given rise to important industries in all countries, the control of which should be directed toward insuring efficacious, innocuous and authentic products. The control should apply to imported products as well as to those of private laboratories in Switzerland. Numerous countries already exercise control, and some of them allow the importation only of serums and vaccines that are controlled in the country where they are made. The federal government, by virtue of a law concerning epizootic diseases, now controls vaccines and serums for veterinary medicine. Such a law confers the necessary power for controlling other similar products.

International Bureau of Public Hygiene

At the extraordinary session of the committee of the International Bureau of Public Hygiene, held in Paris recently, some interesting contagious disease data were given. The mortality from scarlet fever was very high in Roumania. During the Great War it almost disappeared, but lately has returned in an attenuated form. Reports show the importance of hospital isolation. In cities where the greatest number of patients are sent to hospitals, the mortality has dropped from 25 per cent. in 1898 to 6.5 per cent. in 1923, while in the small towns and villages the mortality of those treated at home is 48.39 per cent., and of those hospitalized, 12.11 per cent. Bacteriologic researches in scarlet fever virus have been actively carried out in Italy, England and the United States.

In British India, considerable work has been done on cutaneous parasites of certain rodents. As a plague eradicative measure, the various services of hygiene have attempted to obtain data on the geographic and seasonal distribution of rats and fleas. A report is said to be forthcoming.

At Madagascar, or at least at Tananarive, all the rats captured belonged to the species *Mus alexandrinus*. Mice and shrew-mice abound, but they are supposed to play no part in the propagation of plague. Sixty per cent. of the fleas taken from the rats belonged to the species *Xenopsylla cheopis;* the other species were *Ctenopsylla muculi* and *Echidnophaga* (*sarcopsylla*) *Gallinacea* in about equal proportion. In houses, *Ctenocephalus canis* abounds, and *P. irritans* is less numerous.

In Europe, the black rat, which during the eighteenth century had been driven out by the gray rat, has shown a tendency to reappear. This may be accounted for by the fact that the black rat finds agreeable living conditions in the modern construction of cellars.

As to fleas, *Xenopsylla cheopis* is regarded as the chief distributer of the plague. It lives especially in tropical regions, but by adopting the rat as a host it invades temperate climates. *Ceratophyllus fasciatus* also is pestiferous, and lives more particularly in rats' nests. Generally speaking, from the south to the north of Europe, and from the coast to the interior, *Ceratophyllus* increases in frequency, while *Xenophylla* decreases. *Pulex irritans,* a parasite of man, is rarely responsible for transmission of interhuman plague.

A note on cancer mortality in Spain from 1900 to 1920, which was presented to the bureau, showed an increase. Statistics from Czechoslovakia present the same evidence. This is the case nearly everywhere, the incidence being greater in the female than in the male. The increase is rapid: of 1,000 deaths, the proportion due to cancer, which in 1919 was 45.2, rose to 60.1 in 1923. Researches on cancer of the breast and uterus undertaken in England, Italy and Holland show that the number operated on early represents, at the most 10 per cent. In Belgium, where cancer mortality represents about 50 per thousand of the total death rate, an increase has been noted, but it seems possible to explain it by the increase in the average duration of life.

Respecting locomotor ataxia and general paresis, a note from Japan states that it is as yet impossible to estimate the results of treatment with the arsenical compounds on the frequency of these two parasyphilitic processes. Data collected in Germany seem to indicate that the proportion of cases of tabes and general paresis, in relation to the number of cases of syphilis, is increasing, as if the virulence of the syphilitic virus or its neurotropism had become intensified. On the other hand, researches in England do not confirm this hypothesis.

The treatment of leprosy with ethyl esters of chaulmoogra oil has given encouraging but not conclusive results.

NETHERLANDS

(From Our Regular Correspondent)

Nov. 2, 1925.

The Fourth International Congress on Industrial Accidents and Occupational Diseases

The fourth congress on industrial accidents and occupational diseases, which convened recently in Amsterdam, was attended by 600 representatives from twenty-seven different countries. Previously there had been two separate congresses. This year the two branches on industrial accidents and on occupational diseases were combined into one congress, with the result that the subjects discussed covered a wider range. The congress appears to have been a complete success.

Following the opening address of Dr. Van Eden, the Swiss delegate Dr. Julliand addressed the assembly. He expressed the hope that the representatives of the various countries might do all in their power to cultivate international comity. Mr. Koolen, the minister of labor, presided officially at the opening session. He emphasized the importance of industrial medicine to the individual and to society as a whole. Up to the present time, occupational diseases have not been recognized as such in the Netherlands. Dr. Van Eden likewise stressed the importance of legislation pertaining to occupational diseases, which, rightly viewed, are industrial accidents.

The work of the congress was divided into several sections. I will summarize the principal communications.

THE EXHIBIT

There was a veritable museum of anatomy in which were exhibited collections of bones illustrating the sequelae of industrial fractures. A fine display of safety devices awakened considerable interest. Collections of photographs and drawings, and also statistical documents showing the improvement in labor conditions due to medical reforms instituted in certain factories, were exhibited.

TUBERCULOSIS AND TRAUMATISM

Zollinger of Switzerland presented a paper on traumatism in relation to tuberculosis. The author advanced the view that there is little evidence for ascribing the onset of any form of tuberculosis to traumatic factors. Neither the existence of a point of lowered resistance, nor tubercle bacilli circulating in the blood, nor transmission of tuberculosis to animals has given convincing results. While the existence of traumatic tuberculosis cannot be proved, we may speak of the existence of posttraumatic tuberculosis. But here it must be proved either that the accident introduced tubercle bacilli within the body or that the traumatism lowered the resistance and permitted the development of latent tuberculosis. When a traumatism can be incriminated of causing tuberculosis, we must distinguish between its effect in localizing the disease, in mobilizing a latent infection, or as aggravating existing symptoms. The author reviewed the various kinds of wounds and their relation to tuberculosis. We cannot deny all relation between traumatism and tuberculosis, but we must accept the maximal duration of incubation. The subjoined table illustrates the author's experience with reference to the minimal and maximal periods of incubation.

The Minimal and Maximal Periods of Incubation

Localization	Minimum	Maximum
Tuberculosis of bones and joints	4 to 6 weeks	6 months; in tuberculosis of the cranium, the renal pelvis and the spinal column, 1 year
Pulmonary tuberculosis	End of the first week	4 months
Miliary tuberculosis ..	10 to 12 days, death 15 days after the accident	End of the third week; death 8 weeks after the accident or later
Meningitis	3 to 4 days	10 to 15 days
Pleurisy	End of the second week	3 to 4 months
Peritonitis	2 weeks	Beginning of the fourth week
Tuberculosis of testis and epididymis	3 to 4 weeks	1 to 2 months
Renal tuberculosis	3 to 4 weeks	Several months
Muscular cutaneous tuberculosis and tuberculosis of the mucosa	3 to 4 weeks	Up to 6 months
Tendovaginitis and tendosynovitis	2 months	6 months
Tuberculosis of the lymphatic glands	3 to 4 weeks	3 months

	Minimum		Maximum	
Eyes	Exogenous Infection	Endogenous Infection	Exogenous Infection	Endogenous Infection
Conjunctiva, cornea, sclerotic	5 to 7 days	5 to 6 weeks	10 to 12 days	3 months
Iris, choroid, crystalline lens, retina	5 to 7 days	6 to 7 weeks	End of the second week	4 months

The author said in conclusion that it would be a good thing if, in all countries, accident insurance companies were legally permitted to assume part of the cost of treatment and the compensation of persons in whom accident plays a part in the cause of tuberculosis. This paper was followed by communications by von Friedrich, Presbeano and Liniger. Liniger affirmed that a connection between a peripheral tuberculous process and an accident can be accepted only when the traumatism affected violently the diseased part, and when, furthermore, the beginning and the course of the disease are characteristic. Dr. Diez stated likewise that, in the majority of cases, we are concerned with a focus that preexisted at the site of the traumatism. The sole effect of the traumatism is to reveal and aggravate this preexisting focus.

THE VALUE OF OSTEOSYNTHESIS

Imbert and Cattalorda called attention to certain dangers and disadvantages of osteosynthesis in long-bone fractures. The dangers arise from the metallic substances employed and from the prolonged immobilization that is necessary. Professor Koch of Groningen, on the other hand, was enthusiastic in defense of the method, stating that he had observed excellent results from its use.

INSTRUCTION IN INDUSTRIAL MEDICINE

Industrial medicine has exerted a notable effect on the development of surgery and medical instruction in general. The instruction in industrial medicine is, however, as yet totally inadequate. Kaufmann pointed out that this lack applied to nearly all countries. Switzerland has done much to put this instruction on a systematic basis, but it is still inadequate. With the same object in view, Kalmus of Prague recommended the creation of institutes or of departments in the medical schools, in which instruction in industrial hygiene and first aid to the injured, and special training for medical industrial supervisors would be given. In this connection, Dr. Kaplun stated that in soviet Russia there were 2,000 industrial inspectors, 232 of whom were physicians. May 1, a central institute was opened for the protection of workmen. Dr. Adler explained that in Austria the medical industrial service is a subdivision of factory inspection, coming under the department of sociology.

ACCIDENTS TO THE EYES

Professor Elschnig of Prague reported statistics on eye accidents, covering fourteen years. He concluded that most of these accidents could be avoided if protective measures were systematically employed. He recommended that experienced oculists be attached to the industrial inspection service. Dr. Vanderhoeve of Leyden expressed the view that occupational eye diseases and injuries are rare and that most of them could be easily prevented if suitable hygienic rules were established and followed.

OCCUPATIONAL NERVOUS DISEASES

Professor Crouzon of Paris distinguishes: (1) nervous diseases exclusively or essentially of occupational origin and (2) nervous diseases of occasional occupational origin. There is reason to believe that the group of nervous diseases of occupational origin will eventually receive other additions from our more extended knowledge of the pathology of poisoning due to hydrocarbons, chlorinated carbon compounds, etc.

BERLIN

(From Our Regular Correspondent)

Oct. 31, 1925.

Occultism

At a recent session of the Arbeitsgemeinschaft für praktische Psychologie, at which were gathered representatives from widely different occupations, met to discuss the psychologic aspects of questions bearing on various occupations, Prof. Albert Moll, neurologist and psychologist of Berlin, spoke on the subject "Examination of the Problem of Occultism from the Logical and Psychologic Standpoint." Moll distinguishes spontaneous and nonspontaneous (experimental) phenomena. The latter are observed in sittings held to investigate under what conditions the phenomena appear, whereas the spontaneous phenomena are observed occasionally and are regarded as true. Moll has observed two main attitudes toward phenomena; some persons take them to be genuine without investigation; others reject them entirely because of conflict with their mode of thinking and natural laws, and because occultism is full of contradictions and many instances of fraud have been discovered. Since 1889, Moll has declared nothing impossible; but, on the other hand, has demanded compelling proof before accepting the genuineness of any phenomenon. Moll distinguishes two kinds of experimental sittings; in the first, one complies with the wishes of the medium, but, in the second, observers are permitted so to change the conditions that the proof of absence of fraud is furnished. Occultists, however, never permit sittings of the latter sort, although they sometimes make assertions that they do. In the sittings, one must not be influenced by any feeling of confidence—even toward the experimenters. For example, in an investigation of a woman clairvoyant who was supposed to be able to make diagnoses at a distance, a bribe of 1,000 marks was offered one of his collaborators if he would divulge to the experimenter Moll's diagnosis. Nor should one be unduly influenced by authorities. It is sometimes asserted that in the investigation of occult phenomena all modern scientific aids (for instance, photography) have been employed. But Sommer in Giessen avers that he has demonstrated that only "earthly things" are reproduced on the photographic plate. Reports of investigations of sittings cannot always be relied on. In this connection, Moll mentioned the lawsuit *Rudloff* v. *Moll*, in which three reports were presented, all varying in essential particulars. They were termed "compromise reports," having been prepared by others from statements made by the signers, whereas, the fact is, each member of an investigating committee should testify only to what he himself thinks he observed. In the investigation of clairvoyants with supposed powers of medical diagnosis, the physician must not know the diagnosis in question, as he may unconsciously betray it to the medium.

Moll pointed out the errors of Schrenck-Notzing's work on motion induced from a distance. No accurate reports of the sittings are given. The occultists betray their weakness when they assert that one must see with one's own eyes what happens at the sittings, in order to be impressed. Before an experiment may be said to be scientific, an inquirer must be able to determine from a description of the method employed whether due diligence to prevent fraud was exercised. Personal observations are not necessary in true science. The investigator must not be influenced by the frequency of phenomena or by their improbability; nor are analogies to be regarded as proof. It is believed that prestidigitators are the best persons to investigate occult phenomena; but that is not necessarily true, for occultists are frequently specialists. However, the aid of prestidigitators is sometimes indispensable. Many assertions of occultists are contrary to all logic and experience, particularly those of astrologers. Since an experiment presupposes the ability to change the conditions under which the experiment is conducted, one would have to change the course of the stars in order to apply experimental principles to astrology. If one wishes to carry on a real scientific investigation, one must see to it that all possibility of artificial production of occult phenomena is excluded. In investigating telepathy, all the organs of sense must be excluded, one after the other; first, vision; then hearing, and possibly feeling. Before investigating sittings held in the dark, every experimenter should know how little he can perceive in the dark through the sense of touch, and that he has no idea whether he is touched with five or with ten fingers, or whether he is touched at all. The true specialist does not believe himself infallible. Investigators must be allowed to alter and gradually to restrict the conditions of experiments, and must be very skeptical of their own impressions.

Health Statistics in Prussia

The Prussian report on marriages, births and deaths for the first half of 1925 is favorable as compared with the corresponding period of 1924 and also when contrasted with the first six months of 1913. The number of marriages was 7.62 per thousand population, as against 7.11 for 1924, and it is not far below the figure for the first half of 1913, which was 8.15. The birth rate for the first six months of 1925 was 20.65, as compared with 19.58 for the same period of 1924. The birth rate is, however, still far below that of the first six months of 1913 (27.37). On the other hand, the mortality rate for the first half of 1925 was only 11.79; in 1924 it was 12.51, and in 1913 it was 14.14. The excess of births over deaths in the cities of Prussia with more than 100,000 population was 8.10 per thousand for the first half of 1925, or midway between the figures for 1924 and 1913 (6.34 and 12.38, respectively). The infant mortality rate for 1925 (first half) was 10.2, as compared with 11.3 in 1924 and 12.8 in 1913. In the city of Berlin, 9,644 marriages were contracted in the second quarter of 1925, which is 9.72 per thousand population; there were 12,356 living births, or 12.45 per thousand, and 11,257 deaths, or 11.35 per thousand population. The excess of births over deaths was 1,099, or 1.11 per thousand, which is again the lowest record in Prussia for the second quarter of 1925. The mortality rate, however, was 9.4 per thousand (1,082 deaths), which is only slightly above the average for cities with more than 100,000 population, which was 9.3.

Marriages

William Wiess Belford, Georgetown, Texas, to Miss Elizabeth Russell of Jeffersonville, Ind., October 8.

Joseph Hamilton Smith, Edwight, W. Va., to Miss Hester Jane McLarren of Osceola Mills, Pa., September 9.

Stanley Henry Mellon, Newark, N. J., to Mrs. Madelyn Crane Friedlein of Bloomfield, October 3.

George H. West, Armstrong, Iowa, to Miss Martha Hansen of Des Moines, at Chicago, September 8.

George T. Colvard, Florence, Colo., to Miss Salla Fleda Harrell of Welch, W. Va., November 1.

Martin Van Raalte, St. Louis, to Miss Elsie Louise Kohl of Belleville, in Effingham, October 15.

William A. Kennedy, Minneapolis, to Miss Helen Marie Dore of St. Paul, October 7.

George A. Richardson to Miss Kathryn Embery, both of Philadelphia, October 7.

Harold Francis Smith to Miss Aetna Hunt, both of Iowa City, August 24.

Lay Martin to Miss Carolyn M. Bresee, both of Baltimore, November 19.

Deaths

Albion Walter Hewlett ⊕ San Francisco; Johns Hopkins University Medical Department, Baltimore, 1900; assistant instructor and assistant professor of medicine, Cooper Medical College, San Francisco, 1903-1908; professor of internal medicine and director of the clinical laboratory, University of Michigan Medical School, Ann Arbor, 1908-1916; secretary and professor of medicine, Stanford University School of Medicine, San Francisco; member of the American Physiological Society, the Association of American Physicians, the American Society for Clinical Investigation and the American Society for Experimental Pathology; author of "Functional Pathology of Internal Diseases"; aged 51; died of brain tumor, November 10, at Philadelphia. Dr. Hewlett was appointed a member of the Council on Pharmacy and Chemistry in 1916, when he was professor of medicine at the University of Michigan Department of Medicine. He retained his membership when he was called to Stanford University School of Medicine, as professor of medicine, but in 1922 press of college work obliged him to request that his resignation be accepted. Dr. Hewlett was of great service to the Council, not only during his membership, but also before his appointment and after his resignation. An outstanding piece of work was his report, "Clinical Effects of 'Natural' and 'Synthetic' Sodium Salicylate" (The Journal, Aug. 2, 1913). In this report Dr. Hewlett classified and summarized the reports of clinical trials carried out, at the request of the Council, by leading clinicians, who used "natural" and "synthetic" sodium salicylate. Dr. Hewlett was chairman of the Section on Pharmacolocy and Therapeutics of the Scientific Assembly of the American Medical Association, 1916-1917; Secretary of the Section on Pathology and Physiology, 1911-1912, and Chairman of that section 1912-1913.

Richard Hickman Harte, formerly director of health and charities of Philadelphia, died, November 14, aged 70, at a hospital in Vicksburg, Miss., of pneumonia. Dr. Harte graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1878; after serving as resident physician at the University Hospital and studying in London and Paris, he formed an association with the Pennsylvania Hospital which continued until his death. He was formerly adjunct professor of surgery at his alma mater and on the staffs of St. Mary's, Orthopedic, Gynecean, St. Timothy's, Bryn Mawr (Pa.) Episcopal and Abington (Pa.) hospitals. Dr. Harte served in the American Ambulance Corps in France in 1916, then with the British Expeditionary Forces, and later was a colonel in the U. S. Army Medical Department. He was decorated for conspicuous service by the British and the Belgian governments and was awarded the American distinguished service medal. He was a past president of the College of Physicians of Philadelphia, the Philadelphia Academy of Surgery and of the American Surgical Association (1910-1911); a member of the American Society of Clinical Surgeons; the author of a "Handbook of Local

Therapeutics"; for twelve years editor of the *Transactions of the American Surgical Association* and a frequent contributor to medical journals.

William Emory Studdiford ⊕ New York; Bellevue Hospital Medical College, New York, 1891; professor of obstetrics and gynecology, Columbia University College of Physicians and Surgeons, and formerly professor of gynecology at the University and Bellevue Hospital Medical College; member of the American Gynecological Society and the New York Obstetrical Society; director and attending obstetrician and gynecologist to the Sloane Hospital for Women, consultant to the Presbyterian Hospital, the New York Nursery and Child's Hospital and to the Franklin (N. J.) Hospital; aged 58; died, November 17, of heart disease.

Edward Bennet Bronson, New York; Medical Department of Columbia College, New York, 1869; member of the Medical Society of the State of New York; consultant to the New York City Hospital and the Babies' Hospital of the City of New York; aged 82; died, November 18, of burns received when his house caught fire.

Frederic Benjamin Mooers Cady ⊕ Cambridge, Mass.; Medical School of Harvard University, Boston, 1907; member of the Boston Society of Psychiatry and Neurology and the New England Society of Psychiatry; served in the M. C., U. S. Army, during the World War; aged 44; died, November 12.

Eugene Walker Belknap ⊕ Syracuse, N. Y.; Medical Department of Columbia College, New York, 1892; professor of obstetrics, Syracuse University College of Medicine; formerly on the staff of the Hospital of the Good Shepherd; aged 58; died, November 21, of pneumonia.

Edward Willard Watson, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1865; member of the Obstetrical Society of Philadelphia and the Medical Society of the State of Pennsylvania; aged 82; died, November 19, following a long illness.

Philip Jager, New York; Eclectic Medical College of the City of New York, 1899; member of the Medical Society of the State of New York; formerly connected with the New York Eye and Ear Infirmary and the Harlem Hospital; aged 51; died, November 16.

Benjamin B. Bosworth ⊕ Knoxville, Tenn.; University of Louisville School of Medicine, 1887; formerly president of the Tennessee State Medical Association; delegate to the American Medical Association, 1910; aged 60; died, November 2.

William Smith Garnsey, Gloversville, N. Y.; Homeopathic Medical College of the State of New York, 1880; member of the Medical Society of the State of New York; formerly on the staff of the Littauer Hospital; aged 70; died, November 15.

George Waldo Crary ⊕ New York; Medical Department of Columbia College, New York, 1885; formerly attending surgeon to the department of dermatology, Cornell University Medical College; aged 61; died, November 16, of pneumonia.

Frances Gordon Zwicker, Port Williams, Nova Scotia, Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1903; died, September 25, of injuries received when the automobile in which he was driving was struck by a train.

William Henry Coffman ⊕ Georgetown, Ky.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1876; formerly member of the board of health; aged 73; died, November 13, of heart disease.

Caleb Joseph Emery, Biddeford, Me.; Medical School of Maine, Portland, 1871; member of the Maine Medical Association; Confederate veteran; formerly on the staff of the Webber Hospital; aged 79; died, November 7.

Anthony Z. Valla, Los Angeles; University of Southern California College of Medicine, Los Angeles, 1888; University of Turin, Italy, 1891; for fourteen years connected with the French Hospital; aged 59; died, November 11.

John Franklin Davidson ⊕ Cleveland; Miami Medical College, Cincinnati, 1887; formerly associate in anatomy at the Western Reserve University School of Medicine, Cleveland; aged 65; died, June 12.

Germaine Alexander Jordan, St. Louis; Washington University Medical School, St. Louis, 1888; member of the Missouri State Medical Association; aged 60; died, November 2, of carcinoma.

Walter Webb, West Chester, Pa.; Jefferson Medical College of Philadelphia, 1888; member of the Medical Society of the State of Pennsylvania; aged 60; died, September 3, of angina pectoris.

Thomas Emerson Mitchell ⊕ Columbus, Ga.; Vanderbilt University Medical Department, Nashville, Tenn., 1892; aged 61; died, November 6, at a sanatorium in Atlanta, of valvular heart disease.

Cyrus Kay, Herkimer, N. Y.; Medical Department of Columbia College, New York, 1880; member of the Medical Society of the State of New York; aged 68; died, November 13.

Edwin Aaron Sanborn, Somerville, Mass.; Dartmouth Medical School, Hanover, 1876; member of the Massachusetts Medical Society; aged 76; died suddenly, November 14.

George Frank Young, South Haven, Mich.; University of Michigan Medical School, Ann Arbor, 1899; member of the Michigan State Medical Society; aged 50; died, November 13.

Andrew J. Murchison, Tomberlin, Ark.; University of Louisville School of Medicine, 1893; member of the Arkansas Medical Society; aged 64; died, October 19, of nephritis.

Porter Frederick Dodson ⊕ Wilber, Neb.; Baltimore University School of Medicine, 1889; formerly member of the board of education; aged 59; died, November 14.

Edwin M. Newsom ⊕ Newport News, Va.; University College of Medicine, Richmond, 1909; aged 40; died, November 9, at the Elizabeth Buxton Hospital.

Sarah Danforth Keeney, Plainfield, N. J.; Woman's Medical College of the New York Infirmary for Women and Children, 1874; aged 76; died, November 13.

Joseph M. Carroll, Laurens, Iowa; State University of Iowa College of Medicine, Iowa City, 1879; aged 77; died, in November, of heart disease.

Reuel James Tanquary, Fort Morgan, Colo.; University of Michigan Medical School, Ann Arbor, 1911; aged 37; died, November 16, of influenza.

Charles A. Henry, Sr., Fostoria, Ohio; Eclectic Medical Institute, Cincinnati, 1871; Civil War veteran; aged 81; died, suddenly, November 14.

Rodney M. Neathery, Farmersville, Texas; University of Nashville (Tenn.) Medical Department, 1887; aged 59; died suddenly, November 8.

William Henry Brownell ⊕ Utica, N. Y.; Medical Department of the University of the City of New York, 1882; aged 71; died, in July.

Charles Wellington Allen, Los Angeles; University of Vermont College of Medicine, Burlington, 1882; aged 70; died, October 22.

Theodore Wilcox Bebout ⊕ Stirling, N. J.; Baltimore Medical College, 1897; aged 52; died, November 8, of heart disease.

Walter Wilkinson, Jersey City, N. J.; Bellevue Hospital Medical College, New York, 1889; aged 57; died, November 16.

Laban Dennis, Orange, N. J.; Medical Department of Columbia College, New York, 1866; aged 85; died, November 18.

Julius W. Folk, Joliet, Ill.; Chicago Medical College, 1869; Civil War veteran; aged 81; died, November 10, of pneumonia.

Thomas H. Henry, Orangeville, Ont., Canada; University of Toronto Faculty of Medicine, Toronto, 1892; died in June.

Norman W. Meldrum, Ayr, Ont., Canada; University of Toronto Faculty of Medicine, 1873; aged 77; died, October 2.

Henry H. Bingham, Rochester, N. Y.; University of Buffalo Department of Medicine, 1884; aged 72; died in November.

Francis M. Bishop, Endicott, N. Y.; Hahnemann Medical College of Philadelphia, 1884; aged 85; died, November 10.

William L. Athon, Marshall, Ill.; Cleveland University of Medicine and Surgery, 1882; aged 65; died in November.

Ferdinand King, New York; College of Physicians and Surgeons, Baltimore, 1874; aged 73; died, November 15.

Giles Waite Bryant ⊕ Somerville, Mass.; Dartmouth Medical School, Hanover, 1882; aged 68; died, November 8.

John Lowden, Fountaintown, Ind.; Eclectic Medical Institute, Cincinnati, 1878; aged 76; died, November 7.

Lester Gorham Houle, Kamloops, B. C.; McGill University Faculty of Medicine, 1912; aged 36; died, October 2.

Malcolm C. Black, Hespler, Ont., Canada; Trinity Medical College, Toronto, 1889; aged 66; died, August 23.

Joseph A. Silverman, Willamette, Ore.; Medical College of Ohio, 1894; aged 55; died, November 8.

Rocco Lopiano, New York; University of Naples, Italy, 1891; aged 62; died, November 19.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

EXAMINATION OF BRANDS OF CINCHOPHEN

Report of the A. M. A. Chemical Laboratory

Cinchophen[1] was first described by Doebner and Gieske in 1887; a number of years later it was introduced as a medicine in the United States under the proprietary name "Atophan" by Schering and Glatz, New York, which at that time was the American agent for the firm "Chemische Fabrik auf Actien vorm. E. Schering, Berlin."[2] During the war the proprietary product became quite scarce, but in due time American chemists were synthesizing the needed "phenylcinchoninic acid." The A. M. A. Chemical Laboratory was called on at that time to test the various products. In its report[3] published in 1919 the Laboratory showed that manufacturers had perfected processes so that the products were all good and sufficiently pure to relieve the war scarcity. The melting point, however, which is one of the chief indexes of purity, was still somewhat low. In view of this the laboratory recently reexamined the market supply.

Cinchophen Examinations

Name of Distributor	Cost per Oz.*	Loss on Drying, per Cent.	Ash, per Cent.	Melting Point (Corrected)	Assay, per Cent.
Abbott Laboratories (*a*)	$1.00	0.24	0.1	211-213	99.67
Abbott Laboratories (*b*)	1.00	0.13	0.36	210-212	99.63
Benzol Products Company (*a*)	....	0.18	U†	212-213	99.52
Benzol Products Company (*b*)	0.50	0.055	U†	211-212	99.80
Calco Chemical Company (*a*)	1.00	0.16	0.06	212-213	99.55
Calco Chemical Company (*b*)	1.00	0.28	U†	211.5-213	99.10
Mallinckrodt Chemical Works (*a*)	0.60	0.29	0.12	211.5-212	99.52
Mallinckrodt Chemical Works (*b*)	0.71	0.06	U†	212-213	99.75
Morgenstern & Company (*a*)	0.80	0.12	U†	212-213	99.15
Morgenstern & Company (*b*)	0.60	0.28	0.12	210-211	99.47
Atophan—Schering & Glatz (*a*)	2.50	0.23	0.05	214-215	99.70‡
Atophan—Schering & Glatz (*b*)	2.75	0.23	U†	214-215	99.08‡

* The price actually paid (including postage in a few instances) when obtained from wholesale dealers in Chicago and in the East.

† Less than 0.05 per cent.

‡ The yellow color of the atophan solution makes it necessary to exercise care, particularly by practice titrations and use of controls, to avoid overstepping the end-point.

Twelve specimens of cinchophen representing six brands were subjected to the tests prescribed for the U. S. Pharmacopeia X, which becomes official, Jan. 1, 1926. All were odorless; the color ranged from white to a pronounced orange-yellow. The products all responded to the U. S. P. X qualitative tests. The melting point, moisture content, ash and assay (by titration according to U. S. P. X) are given in the accompanying table. The Pharmacopeia requires that the melting point should be about 210 C. In the assay the product is required to be 99 per cent. pure; all the products were found to be above this amount.

Each of the products conformed to all the requirements of the U. S. Pharmacopeia with the unimportant exceptions of color, in one instance, and of ash[4] in another instance. The findings, particularly the melting point, show that the American cinchophen is still purer than in 1918-1919, though at that time it was sufficiently pure for medical purposes. The examination also points out that all products reported on in this paper are equally good for therapeutic purposes, and one is no better than another.

[EDITORIAL NOTE.—The report of the Chemical Laboratory brings out some facts that are directly of interest to the medical profession, and indirectly of interest to the public. It shows, first, that the six brands of cinchophen examined by the methods of the new pharmacopeia are all of good quality. It shows, also, the exorbitant price that the public and the profession have to pay for proprietorship in medicines. Five of the six brands examined are nonproprietary forms of cinchophen. The sixth brand, Atophan, is a proprietary form of cinchophen, no better and no worse than the other five. The report shows that while cinchophen under its nonproprietary pharmacopeial name can be purchased at prices ranging between fifty cents and one dollar an ounce, Atophan costs from $2.50 to $2.75 for the same amount. Obviously there is no justification for such an exorbitant variation. It has frequently been pointed out that the price paid by the public for a "patent medicine" is, on the admission of the "patent medicine" people themselves, enormously over and beyond the fair trade value of the preparations. "Patent medicine" exploiters have virtually admitted that from fifty to seventy-five cents of every dollar charged for a given medicine is expended in advertising the stuff sold. When the physician needs to prescribe cinchophen, his patient will get just as good therapeutic results from a pure cinchophen costing fifty cents an ounce as he will get from an equally pure cinchophen under a fancy name costing $2.75 an ounce. The difference in these wide variations in prices, however, allows the exploiter who sells cinchophen under a trade-marked name to carry on an extensive advertising campaign and hypnotizes the medical profession into the belief that there is some esoteric value in the Atophan brand of cinchophen that does not reside in the non-trade marked cinchophens sold under the pharmacopeial name. As the Bayer concern has given the public the impression that the only genuine aspirin is that put out by it, so the advertising of Schering & Glatz seems to imply that the only genuine cinchophen is put out by Schering & Glatz; "If it's not S. & G.'s, it's not Atophan." This slogan, while technically true, because Schering & Glatz own the trade mark Atophan, is inferentially misleading in that the medical profession is likely to forget that Atophan is merely cinchophen. The way for physicians to show practical disapproval is simple: Prescribe the pharmacopeial cinchophen rather than the proprietary Atophan.]

Correspondence

EDEMA IN MYOCARDIAL INSUFFICIENCY

To the Editor:—In THE JOURNAL, November 14, Resnik and Keefer call attention to the edema of the face sometimes seen in grave myocardial insufficiency. They conclude that it is probably due to impaired renal function, and cite studies of the nonprotein content of the blood as evidence for this conclusion.

If my understanding of their point of view is correct, they feel that the facial edema is of a different nature than that observed in the dependent portions: that the latter is the result of circulatory deficiency with stasis, and that the former is the result of kidney insufficiency produced by stasis in the kidney.

That the finding of increased amounts of nonprotein nitrogen in the blood of persons with severe myocardial failure is not absolute evidence of kidney insufficiency, and that the height of the retention is not an absolute index of the degree of kidney insufficiency is admitted by the authors as they discuss the interrelation of the tissues and blood as well as those of the blood and kidneys in determining the height of the retention or even its presence or absence.

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[1] The U. S. P. IX described the product under the name Acidum phenylcinchoninicum (phenylcinchoninic acid). Later the Chemical Foundation and the Council on Pharmacy and Chemistry adopted the coined nonproprietary name "Cinchophen," under which name it is described in the recently issued edition of the Pharmacopeia (U. S. P. X). The chemical name is 2 phenylquinolin-4-carboxylic acid.

[2] For a number of years Atophan was included in New and Nonofficial Remedies, but in 1921 the Council on Pharmacy and Chemistry found the product no longer acceptable because of unwarranted therapeutic claims and for other reasons.

[3] Leech, P. N.; Rabak, William; and Clark, A. H.: American Made Synthetic Drugs, II, Examination of Procain, Barbital, Phenetidyl, Acetphenetidin and Phenylcinchoninic Acid Manufactured Under Federal Trade Commission Licenses, J. A. M. A. **73**: 754 (Sept. 6) 1919; Ann. Rep. A. M. A. Chem. Laboratory **12**: 7, 1919.

[4] The U. S. P. X requires that the ash from 0.2 gm. of cinchophen should be negligible. The term "negligible" is defined as a quantity less than 0.0005 gm.; hence the ash from cinchophen should not exceed 0.25 per cent. One specimen of cinchophen-Abbott yielded 0.36 per cent. ash. The ash appeared to consist of sodium sulphate. The two specimens of atophan were somewhat darker in color than prescribed by the U. S. P. X.

So little is known of tissue metabolism that it is dangerous to draw conclusions as to the rôle of the kidneys even in cases of so-called renal edema unassociated with cardiac disease. And in that type of renal disease associated with the greatest edemas, namely, nephrosis, there is no nitrogen retention at all.

Some recent observations in the use of the intradermal salt solution test as an index of tissue affinity for water throw some light on this problem. If 0.2 c.c. of 0.85 per cent. solution of sodium chlorid is injected intracutaneously over the shin, in the abdominal wall and over the deltoid muscle in a case of myocardial insufficiency, the rate of disappearance will be most rapid in the leg, less rapid in the abdomen, and slowest in the skin over the deltoid. Sixty minutes or more is usually required for the complete absorption of the injected fluid in normal persons. In cases of cardiac decompensation and edema of the dependent portions of the body, it is not at all unusual to get complete disappearance of the wheal from the skin over the deltoid in from twenty to thirty minutes when there is no demonstrable edema in this area. Edema usually appears in this condition when the salt solution disappearance time has dropped to twenty minutes or less.

Such observations show that there is an increased tissue affinity for water, a true pre-edema state in the tissues generally in myocardial insufficiency. Edema develops in the face or arm just as it develops in the more dependent structures when, because of deficient circulation locally, the tissues have an increased affinity for water. Naturally, this occurs only in the very severe types of failure and is usually a part of the terminal picture.

Is it not possible that this may be a more likely explanation than that of edema due specifically to kidney failure secondary to chronic passive congestion?

Milton B. Cohen, M.D., Cleveland.

CONTROL OF UTERINE HEMORRHAGE BY THE ROENTGEN RAY

To the Editor:—The following report of a case may prove of interest in relation to the article by Dr. William S. Newcomet and the discussion by Dr. John H. Girvin (The Journal, November 7):

A married woman, aged 33, with three children living, was seen with Dr. J. I. Smith in 1920 because of uterine bleeding of more than a year's duration. For three or four months she had been confined to her bed and had to be carried to the office for the first roentgen-ray treatment. Examination was practically negative, revealing slight enlargement of the uterus and marked anemia. The previous history of the patient was unimportant. Treatment was given by means of the roentgen ray through two portals of entry an
with 9 inch spark gap, 5 *milliamperes, 10 inch* ta
tance, 4 mm. aluminum filter, ten minutes. This was
every twenty-one days for four treatments. Follow
last treatment there was a temporary menopause for
three months, when the patient again began to menst
About one year after the last treatment, she became preg
Dr. J. W. Crook, who attended her in her confinement,
that labor was normal, possibly emature, but tl
there was almost entire absence, of the fetu

J. R. n, Ky.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

VITAMINS D AND E

To the Editor:—The editorial in The Journal, November 7, about vitamins is excellent; much of news in it and much of good advice for the busy practitioner. But what about the D and E vitamins? Most of us do not know anything about them. Please inform us of their proper effects, and where they are to be found. The E is said to be necessary for fecundation—to be an antisterility factor.

Richard Hogner, M.D., Boston.

Answer.—Vitamin D is the designation now generally applied to the antirachitic vitamin to distinguish it from the fat-soluble vitamin A with which it is associated in certain antirachitic foods, such as cod liver oil. The evidence for this special identity of vitamin D was secured through demonstration that certain fats, such as butter fat, protect against or cure xerophthalmia, although they have at best feeble antirachitic potency; others, such as coconut oil, may facilitate the deposition of lime salts in bone, yet show none of the conventional potencies of vitamin A. The vitamin A may be destroyed in cod liver oil through aeration, so that the product will no longer cure ophthalmia, although its antirachitic characteristics are retained. Through irradiation with ultraviolet rays, food substances may acquire outspoken antirachitic potencies analogous to, if not identical with, vitamin D. These topics have repeatedly been discussed in The Journal. A tentative list showing the distribution of vitamins among common foods has just been published (Morse, W.: Applied Biochemistry, Philadelphia, W. B. Saunders Company, 1925, p. 919 ff.). The expression vitamin D as here used should not be confused with so-called bios, a substance promoting the growth of yeast and to which Funk earlier applied the designation D, which has not found widespread acceptance.

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ishop, K. Existence of a Hitherto Unknown tial for oduction, The Journal, Sept. 15,
K . *Rec.* **27**:203, 1924.
(April) 1924.
M. M.: *J. Biol. Chem.*
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Daniels, A. L., and 1925.
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DESENSITIZATION TO ANTITOXIN

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How can desensitization thus be accomplished? M.D.

Answer —To desensitize a patient to horse serum so as to minimize the danger of giving further injections, the usual procedure is to begin by giving a very small quantity of the serum to be used and gradually increasing the amount injected.

A 1:10 dilution of the serum in salt solution may be made; from 0.5 to 1 c c. of this dilution is given hypodermically. Fifteen minutes later, 2 c.c. of this diluted serum is given and one-half hour after the first injection, 0.5 c c. of the diluted serum is injected

A fourth injection of 1 c c of undiluted serum is given one hour after the first, and two hours after the first dose the remainder of the desired amount of serum may be given.

In case sensitization is known to be of considerable degree by history or by skin tests, desensitization may be preceded by a hypodermic injection of from 1/150 to 1/100 grain (0 4 to 0 6 mg.) of atropin and a hypodermic of from 5 to 10 minims (0 3 to 0 6 c.c.) of epinephrin solution (1:1,000) be held in readiness to give if untoward symptoms follow the desensitizing injections. At the same time, the first dose of serum may be diminished.

If a history of horse asthma is present, desensitization should be attempted with much greater precaution and not more than 0.1 c.c. of a 1:100,000 dilution given as a first dose.

TUBERCULOSIS OF SPINE

To the Editor —Will you kindly give me the most practical methods of treatment of tuberculosis of lumbar vertebrae which later formed an abscess in the inguinal region? This abscess was ruptured spontaneously and there is a sinus, about 10 inches long, leading from the opening toward the spine. The patient is a man, 28 years old, in good health. I saw him six weeks ago and have been trying to treat him with glycerin and iodoform, 10 per cent, and bismuth paste without any apparent improvement All possible means to build up his health and resistance have been included with the local treatment. M.D.

Answer.—The treatment of tuberculosis of the lumbar spine resolves itself into two mutually reacting factors: hygienic, or improvement of the general health, and local protective measures for fixation of the diseased region. The greatest difficulty with the practitioner untrained in orthopedic methods is with the immobilizing part of the treatment. Continued recumbency is of first importance in taking the weight off the diseased vertebrae. The patient should be kept lying down without being allowed to sit up once for many months until all acute symptoms subside and the discharge is greatly diminished Then he should gradually resume the sitting posture, using a reclining chair at first. During all this time his lumbar spine should be held immovable by a plaster cast extending from the axilla to the knee of the side with the psoas abscess The Albee or Hibbs operations for fixing the spine may be used by experienced operators. Injections of sinuses have not generally been found curative. General surgical cleanliness of the wounds is all that they demand, as they are but superficial outlets for the deep lying disease

CLIMATE FOR RHEUMATISM

To the Editor —To what extent has "climate" an effect on the pain of so-called rheumatism and neuritis? After eliminating commonly accepted causes of such things there is a large class of patients who, as they approach middle life, complain a great deal of muscular stiffness, aches and pains of various kinds, pain that is worse after sundown, and before changes of dry to damp They are generally easily stiffened up after a little unusual exercise, they have difficulty in lying in one position long at night, and so on ad infinitum They are often people who have "worked hard" for a good many years They have difficulty in sitting in one position, and get restless in church and like places They are not crippled up Elimination of focal infections, such as teeth and tonsils, seem to do them no good Are these people just partially "worn out"? Would a change in climate make them more comfortable?

Paul R Howard, M.D, Kewanee, Ill.

Answer —The symptoms described are suggestive of arteriosclerosis Persons with the conditions mentioned do not tolerate well extremes of climate, either hot or cold, but might be benefited by sunny, warm and equable climate, which also has a favorable effect on rheumatic and neuritic pains.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

Alabama: Montgomery, Jan. 12. Chairman, Dr. S. W. Welch, Montgomery.

Arizona: Phoenix, Jan. 5 6. Sec, Dr. W. O. Sweek, 404 Heard Bldg, Phoenix.

Colorado: Denver, Jan. 5. Sec., Dr. David A. Strickler, 612 Empire Bldg, Denver.

Delaware: Wilmington, Dec. 8 9 10. Pres Med. Coun, Dr. Henry W. Briggs, 1026 Jackson St., Wilmington

District of Columbia: Jan 12 Sec, Dr. Edgar P Copeland, Apt. 104, Stoneleigh Court, Washington, D. C

Hawaii: Honolulu, Jan. 11. Sec, Dr. G C Milnor, 401 So. Beretania St, Honolulu

Illinois. Chicago, Jan. 19-21. Supt. of Reg, Mr. V. C Michels, Springfield, Ill.

Indiana: Indianapolis, Jan. 12. Sec., Dr. W. T. Gott, 421 State House, Indianapolis.

Kentucky: Louisville, Dec. 8-10. Sec, Dr. A T McCormack, 532 W. Main St., Louisville.

Louisiana: New Orleans, Dec 10-12. Sec, Dr. Roy B Harrison, 1507 Hibernia Bank Bldg, New Orleans

Maryland: Baltimore, Dec. 8 11 Sec, Reg Bd, Dr Henry M. Fitzhugh, 1211 Cathedral St., Baltimore, Sec, Homeo Bd, Dr J S. Garrison, 517 Old Orchard Rd., Baltimore.

Minnesota Minneapolis, Jan. 5 7. Sec., Dr. Thomas S. McDavitt, 734 Lowry Bldg, St. Paul.

North Dakota: Grand Forks, Jan 5. Sec, Dr George M Williamson, Grand Forks.

Oregon: Portland, Jan. 5-7. Sec., Dr. U. C Coe, 1208 Stevens Bldg, Portland.

Rhode Island: Providence, Jan. 7. Sec, Dr. Byron U. Richards, State House, Providence.

South Dakota Pierre, Jan. 19. Dir Med Licensure, Dr H R Kenaston, Bonesteel

Utah Salt Lake City, Jan. 5. Director of Reg, Mr J. T. Hammond, 412 State Capitol Bldg, Salt Lake City.

Virginia. Richmond, Dec. 8 11. Sec, Dr J W Preston, 720 Shenandoah Life Bldg., Roanoke.

Washington: Olympia, Jan. 12. Sec, Mr. William Melville, 15 Insurance Bldg, Olympia.

Wisconsin. Madison, Jan. 12-14. Sec, Dr. Robert E. Flynn, 315 State Bank Bldg, La Crosse

Wisconsin Milwaukee, *Basic Sciences,* Dec. 18 19 Sec, M F. Guyer, Madison.

Wisconsin June-July Examination

Dr. Robert E. Flynn, secretary of the Wisconsin Board of Medical Examiners, reports the written and practical examination held at Milwaukee, June 30 and July 1-2, 1925. The examination covered 18 subjects and included 100 questions. An average of 75 per cent. was required to pass Of the 111 candidates examined, 91, including 6 osteopaths, passed, and 20, including 8 osteopaths, failed Twenty-one candidates, including 1 osteopath and 1 undergraduate, were licensed by reciprocity. Two candidates were granted new licenses in exchange for previous certificates of registration The following colleges were represented

PASSED

College	Year Grad	Per Cent.
[illegible] Medical School	(1925)	83 6
[illegible] ool of Medicine	(1925)	86 8
[illegible] Medical School	(1924)	84 3, [illegible] 89 4, 90 3, 90 4
[illegible] Medical College	(1924)	86 5, (1925) 84 4, 84 9, 90 1 (1925)* 90, 91
University of Illinois College of Medicine	(1925)	86 2, 86 9, (1925)* 84 1, 88 8, 89 7 91
Detroit College of Medicine and Surgery	(1923)	82 5
University of Michigan Medical School	(1925)	84.3
University of Minnesota Medical School	(1924)	85, 86
Washington University School of Medicine	(1922)	87 1
University of Pennsylvania School of Medicine	(1924)	84 4, (1925) 85 3, 86 1, 87 1, 87 2, 91 2
Marquette University School of Medicine	(1925)*	80 2, 80 8, 80 9, 82 3, 82 6, 82.7, 82.8, 83, 83 3 83 6, 83 6, 83 9, 84, 84 1, 84 1, 84 1, 84 4, 84 6, 84 7, 84 8, 85 3, 85 5, 85 8, 86 3, 86 8, 86 8 86 8, 86 9, 86 9, 86 9, 86 9, 87 5, 87 7, 87 7, 87.8 87 8, 87 9, 88 2, 88 6, 88 7, 88 9, 89 2, 89 2, 89 2 89 3 89 9, 90 2, 90 4, 93
Queen's University Faculty of Medicine	(1924)	87 7
University of Toronto Faculty of Medicine	(1923)	86 9
University of Western Ontario Medical School	(1924)	84 5
University of Vienna, Austria	(1918)†	89 2
University of Freiburg Germany	(1908)†	79 3
Osteopaths		81, 84 4, 84 9, 86 8, 88 5, 91‡

FAILED

College	Year Grad.	Number Failed
Chicago College of Medicine and Surgery	(1917)	1
Washington University School of Medicine	(1924)	1
Marquette University School of Medicine	(1925)*	1
Milwaukee Medical College	(1908)	1
University of Vienna Austria	(1910)† (1922)†	2

as they discuss the interrelation of the tissues and blood as well as those of the blood and kidneys in determining the height of the retention or even its presence or absence.

So little is known of tissue metabolism that it is dangerous to draw conclusions as to the rôle of the kidneys even in cases of so-called renal edema unassociated with cardiac disease. And in that type of renal disease associated with the greatest edemas, namely, nephrosis, there is no nitrogen retention at all.

Some recent observations in the use of the intradermal salt solution test as an index of tissue affinity for water throw some light on this problem. If 0.2 c.c. of 0.85 per cent. solution of sodium chlorid is injected intracutaneously over the shin, in the abdominal wall and over the deltoid muscle in a case of myocardial insufficiency, the rate of disappearance will be most rapid in the leg, less rapid in the abdomen, and slowest in the skin over the deltoid. Sixty minutes or more is usually required for the complete absorption of the injected fluid in normal persons. In cases of cardiac decompensation and edema of the dependent portions of the body, it is not at all unusual to get complete disappearance of the wheal from the skin over the deltoid in from twenty to thirty minutes when there is no demonstrable edema in this area. Edema usually appears in this condition when the salt solution disappearance time has dropped to twenty minutes or less.

Such observations show that there is an increased tissue affinity for water, a true pre-edema state in the tissues generally in myocardial insufficiency. Edema develops in the face or arm just as it develops in the more dependent structures when, because of deficient circulation locally, the tissues have an increased affinity for water. Naturally, this occurs only in the very severe types of failure and is usually a part of the terminal picture.

Is it not possible that this may be a more likely explanation than that of edema due specifically to kidney failure secondary to chronic passive congestion?

Milton B. Cohen, M.D., Cleveland.

CONTROL OF UTERINE HEMORRHAGE BY THE ROENTGEN RAY

To the Editor:—The following report of a case may prove of interest in relation to the article by Dr. William S. Newcomet and the discussion by Dr. John H. Girvin (The Journal, November 7):

A married woman, aged 33, with three children living, was seen with Dr. J. I. Smith in 1920 because of uterine bleeding of more than a year's duration. For three or four months she had been confined to her bed and had to be carried to the office for the first roentgen-ray treatment. Examination was practically negative, revealing slight enlargement of the uterus and marked anemia. The previous history of the patient was unimportant. Treatment was given by means of the roentgen ray through two portals of entry anteriorly, with 9 inch spark gap, 5 milliamperes, 10 inch target distance, 4 mm. aluminum filter, ten minutes. This was repeated every twenty-one days for four treatments. Following the last treatment there was a temporary menopause for two or three months, when the patient again began to menstruate. About one year after the last treatment, she became pregnant. Dr. J. W. Crook, who attended her in her confinement, says that labor was normal, possibly a little premature, but that there was almost entire absence of the cranium of the fetus.

J. B. Mason, M.D., London, Ky.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will *not* be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

VITAMINS D AND E

To the Editor:—The editorial in The Journal, November 7, about vitamins is excellent; much of news in it and much of good advice for the busy practitioner. But what about the D and E vitamins? Most of us do not know anything about them. Please inform us of their proper effects, and where they are to be found. The E is said to be necessary for fecundation—to be an antisterility factor.

Richard Hogner, M.D., Boston.

Answer.—Vitamin D is the designation now generally applied to the antirachitic vitamin to distinguish it from the fat-soluble vitamin A with which it is associated in certain antirachitic foods, such as cod liver oil. The evidence for this special identity of vitamin D was secured through demonstration that certain fats, such as butter fat, protect against or cure xerophthalmia, although they have at best feeble antirachitic potency; others, such as coconut oil, may facilitate the deposition of lime salts in bone, yet show none of the conventional potencies of vitamin A. The vitamin A may be destroyed in cod liver oil through aeration, so that the product will no longer cure ophthalmia, although its *antirachitic characteristics are retained. Through irradiation* with ultraviolet rays, food substances may acquire outspoken antirachitic potencies analogous to, if not identical with, vitamin D. These topics have repeatedly been discussed in The Journal. A tentative list showing the distribution of vitamins among common foods has just been published (Morse, W.: Applied Biochemistry, Philadelphia, W. B. Saunders Company, 1925, p. 919 ff.). The expression vitamin D as here used should not be confused with so-called bios, a substance promoting the growth of yeast and to which Funk earlier applied the designation D, which has not found widespread acceptance.

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Evans, H. M., and Bishop, K. S.: *Anat. Rec.* **27**:203, 1924.
Sure, B.: *J. Biol. Chem.* **58**:709, 1924.
Anderegg, L. T.: *J. Biol. Chem.* **59**:587 (April) 1924.
Mattill, H. A.; Carman, J. S., and Clayton, M. M.: *J. Biol. Chem.* **61**:729 (Oct.) 1924.
Miller, H. G., and Yates, W. W.: *J. Biol. Chem.* **62**:259 (Nov.) 1924. Sure, B.: *J. Biol. Chem.* **62**:371 (Dec.) 1924. Daniels, A. L., and Hutton, M. K.: *J. Biol. Chem.* **63**:143 (Feb.) 1925.
Sure, B.: *J. Biol. Chem.* **63**:211 (March) 1925.
Hart, E. B., and others: *J. Biol. Chem.* **65**:67 (Aug.) 1925.
Evans: *Proc. Nat. Acad. Sc.* **11**:373, 1925.
Mason: *Proc. Nat. Acad. Sc.* **11**:377, 1925.

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How can desensitization thus be accomplished? M.D.

Answer.—To desensitize a patient to horse serum so as to minimize the danger of giving further injections, the usual procedure is to begin by giving a very small quantity of the serum to be used and gradually increasing the amount injected.

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Paul R. Howard, M.D., Kewanee, Ill.

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Oregon: Portland, Jan. 5-7. Sec., Dr. U. C. Coe, 1208 Stevens Bldg., Portland.

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South Dakota: Pierre, Jan. 19. Dir. Med. Licensure, Dr. H. R. Kenaston, Bonesteel.

Utah: Salt Lake City, Jan. 5. Director of Reg., Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

Virginia: Richmond, Dec. 8-11. Sec., Dr. J. W. Preston, 720 Shenandoah Life Bldg., Roanoke.

Washington: Olympia, Jan. 12. Sec., Mr. William Melville, 15 Insurance Bldg., Olympia.

Wisconsin: Madison, Jan. 12-14. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., La Crosse.

Wisconsin: Milwaukee, *Basic Sciences,* Dec. 18-19. Sec., M. F. Guyer, Madison.

Wisconsin June-July Examination

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PASSED

College	Year Grad.	Per Cent.
University of California Medical School	(1925)	83.6
Howard University School of Medicine	(1925)	86.8
Northwestern University Medical School	(1924)	84.3
	(1925)*	85.2, 87.6, 89.4, 90.3, 90.4
Rush Medical College	(1924)	86.5
	(1925)	84.4, 84.9, 90.1
	(1925)*	90, 91
University of Illinois College of Medicine	(1925)	86.2, 86.9
	(1925)*	84.1, 88.8, 89.7, 91
Detroit College of Medicine and Surgery	(1923)	82.5
University of Michigan Medical School	(1925)	84.3
University of Minnesota Medical School	(1924)	85, 86
Washington University School of Medicine	(1922)	87.1
University of Pennsylvania School of Medicine	(1924)	84.4
	(1925)	85.3, 86.1, 87.1, 87.2, 91.2
Marquette University School of Medicine	(1925)*	80.2, 80.8, 80.9, 82.3, 82.6, 82.7, 82.8, 83, 83.3, 83.6, 83.6, 83.9, 84, 84.1, 84.1, 84.1, 84.4, 84.6, 84.7, 84.8, 85.3, 85.5, 85.8, 86.3, 86.8, 86.8, 86.8, 86.9, 86.9, 86.9, 86.9, 87.5, 87.7, 87.7, 87.8, 87.8, 87.9, 88.2, 88.6, 88.7, 88.9, 89.2, 89.2, 89.2, 89.3, 89.9, 90.2, 90.4, 93
Queen's University Faculty of Medicine	(1924)	87.7
University of Toronto Faculty of Medicine	(1923)	86.9
University of Western Ontario Medical School	(1924)	84.5
University of Vienna, Austria	(1918)†	89.2
University of Freiburg, Germany	(1908)†	79.3
Osteopaths		81, 84.4, 84.9, 86.8, 88.5, 91‡

FAILED

College	Year Grad.	Number Failed
Chicago College of Medicine and Surgery	(1917)	1
Washington University School of Medicine	(1924)	1
Marquette University School of Medicine	(1925)*	1
Milwaukee Medical College	(1908)	1
University of Vienna, Austria	(1910)† (1922)†	2

University of Berlin, Germany	(1922)†	1
University of Bonn, Germany	(1923)†	1
University of Jena, Germany	(1917)†	1
University of Wurzburg, Germany	(1923)†	1
University of Athens, Greece	(1916)†	1
University of Budapest, Hungary	(1912)	1
Osteopaths		8

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
Northwestern University Medical School	(1904)	Illinois
Rush Medical College	(1922), (1923), (1924), (1925)	Illinois
University of Illinois Coll. of Med.	(1917) Minnesota, (1924)	Illinois
State University of Iowa, College of Medicine	(1905)	Iowa
Johns Hopkins University Medical Department	(1916)	Minnesota
University of Maryland School of Medicine	(1915)	Maryland
University of Michigan Medical School	(1917), (1919)	Michigan
Minneapolis College of Physicians and Surgeons	(1897)	Iowa
University of Minnesota Medical School	(1902)	Minnesota
Jefferson Medical College of Philadelphia	(1918)	Illinois
Meharry Medical College	(1916), (1922)	Tennessee
University of Texas Department of Medicine	(1913)	Texas
University of Heidelberg, Germany	(1920)†	Colorado
Osteopath		Missouri
Undergraduate		Texas

[*] These candidates have finished their medical course and will receive their M.D. degrees on completion of a year's internship in a hospital.

† Graduation not verified by the American Medical Association.

‡ This candidate is a licensed osteopath, who received his license to practice surgery after this examination.

Book Notices

The Mechanism and Graphic Registration of the Heart Beat. By Sir Thomas Lewis, M.D., F.R.S., F.R.C.P., Physician of the Staff of the Medical Research Council. Third edition. Cloth. Price, 50 shillings. Pp. 529, with 400 illustrations. London: Shaw & Sons, Ltd., 1925.

This is really a new edition and not simply a reprint of the previous edition, with slight changes. We may quote from the publisher's announcement the following facts that are borne out by an examination of the volume: Three of the original chapters have been omitted and eight new chapters have been added. Much new material has been incorporated into other chapters. Much of the old text has been compressed. Altogether there are sixty more pages than in the former edition. The book has been brought down to date. There is full consideration of circus movement, the action of quinidin, the origin of extrasystolic disturbances, and the theory of heart block. We may add that the commanding position occupied by Lewis as an authority on the heart, his gift of clear writing, and the excellent work of the publishers, make this a book that students of heart problems will be eager to own and read.

The Physiology of Mind. An Interpretation Based on Biological, Morphological, Physical and Chemical Considerations. By Francis X. Dercum, A.M., M.D., Ph.D., Professor of Nervous and Mental Diseases in the Jefferson Medical College. Second edition. Cloth. Price, $3.50 net. Pp. 287. Philadelphia: W. B. Saunders Company, 1925.

The mind is a form of reaction to the stimuli of the environment. These stimuli act on the organism of the sentient world in a uniform manner predetermined by the laws of physics and chemistry. The reception of these stimuli in unicellular organisms causes reactions of a minimal variety. As the receiving and reacting organism gains in complexity, the determined reactions gain in variety. Variety is enhanced by the interposition of a transmitting, or nervous, system, which conducts the reactions of the receptor elements to the effector elements. In the oldest types and portions of the nervous system, the pathways of this transmission are fixed. They handle those situations to which the term instinctive may be applied. The tropisms of the simpler forms are clearly their reactions to the forces of the environment: reactions determined by the physical nature of the stimuli. Yet some of these reactions seem to be the result of conscious or deliberate choice. When the pathways of transmission are simple the effector responses are simple, as in the lower forms of life with the segmental type of brain: the nose brain, the eye brain, the ear brain, the skin brain and the visceral brain. In the higher forms, there is in addition to this segmental brain the neo-encephalon or telencephalon. In this structure the pathways are not fixed, and the potentialities for reaction are numerous, variable and adaptable. This variability is served and in part explained by the ameboidism of the cortical neurons, which allows an impulse to pass over any one of a number of pathways. This impulse is of an electrical nature. Consciousness is present when the pathways of transmission are variable, not when they are fixed; it is a phenomenon of cortical or telencephalon transmission. Stimuli tend to traverse the same pathways. As these pathways become more and more fixed, consciousness diminishes. If a pathway in the telencephalon has been once used, its subsequent image is aided by the memory of the first passage. Frequent and unchanging passage over a certain pathway tends toward fixing the character of the reaction; it approaches the level of the instinct. In the brain of transmission consciousness is of dynamic power; attention, it is believed, is not invaded by that which is of low dynamic power. The functions of the segmental brain of the lower forms are performed by the thalamus. The pathways to and from the thalamus and the cortex are of great importance. Sensations, feelings and emotions, the products of thalamic activity, are transmitted to the cortex. If they are of sufficient dynamic power, they invade the stream of consciousness. However, the dynamic power of the brain of cortical transmission, the stream of consciousness, is of such a scale of dynamic force that it usually dominates the activity of the thalamus. The striatum is concerned with fixed associations. It takes over from the cortex many of the controls originally present in consciousness. Frequent repetition, as in walking and in speech, leads to fixed reactions; as these lose their variability and become fixed, the striatum assumes them and they cease to be represented in consciousness. Transmission depends on the condition of the neuronic pathways. The metabolism of the neuron is profoundly influenced by the hormones of the endocrine glands. The thyroid, the pituitary and the chromaffin system dominate during periods of activity; the thymus, the parathyroids and the pancreas are of more importance during periods of reconstructive rest. The activities of these glands are of great importance in influencing the functions of the thalamus. Hormonic activity is of great importance in determining tropisms and instincts. If stimuli enter the thalamus and there activate an aggregation of neurones, and if the transmission occurs from this aggregation to the cortex, the proper neurons in the cortex must respond, or the transmission that occurs back to the thalamus will arouse a sense of pain; if the proper combinations are effected, a sense of pleasure will arise. Impressions from the physical world are constantly required to correct or check cortical activities. All matter is in motion; hence it must be regarded as of four dimensions, the three of space plus that of time. This is true of living as of inorganic matter.

After a study of this little book, the entire field of mental life seems simple; receptor, transmission and effector—and the awareness is an attribute of the complexities of the transmission. In the addendum, thirty-five pages are devoted to an exposition of the mechanisms that underlie psychopathology. Thoughts and actions that are the symptoms of hysteria are due to the inability of the patient to check or redirect the train of neuronic activity suggested, from no matter what source. In dreams, deliria and confused states, the train of transmission is faulty and remains uncorrected by impressions from the external, objective world. In those states termed degenerative, such as dementia praecox, an adynamia or feebleness of transmission is postulated, and the supporting metabolic background also being weak, the imperfectly constituted neurons gradually deteriorate. In that type of mental disturbance in which disorders of feeling appear to be more basic than those of conscious thinking, malfunctioning of the aggregations of neurons in the thalamus is assumed. As a result, the cortical supply of information of the world outside consciousness is faulty. Hence abnormal cortical or conscious activity is predetermined. In melancholia, synaptic transmissibility is diminished by faulty hormonic influence of the endocrine glands; in mania, it is increased. In the last few pages of the volume, which precede a comprehensive index, freudism is swept into the rubbish heap with a gesture suggestive of intolerant authority.

This book is the work of an authority who has gathered together the established facts of the fundamental sciences and from them drawn conclusions as to the working of that intangible function or thing, the mind. Of necessity there are unbridgable gaps between the material—the physical and the chemical—and the immaterial—the mental and the spiritual. These gaps, like those postulated at the synapses, can be closed only by the functioning of consciousness. This functioning is energy, and if energy is thought of as material, then the material continuum extends directly into the mental. This volume might very well serve as a textbook for the student to whom dogmatic facts must be served, who must have something fixed that he can grasp, not something as fluid as the progress of knowledge. By those to whom this progress seems as important as the facts garnered on the way, some statement of such progress would be appreciated.

TRAITEMENT DES FRACTURES ET LUXATIONS DES MEMBRES. Par Jacques Leveuf, Chirurgien des hôpitaux de *Paris* et *Ch. Girode-P.* Mornard-Raoul Monod, Chefs de clinique à la Faculté de médecine de Paris. Préface du Pr. Pierre Delbet. Paper. Price 25 francs. Pp. 464, with *247 illustrations. Paris:* Masson et Cie, 1925.

The nonoperative treatment of fractures is first taken up in detail. The use of Delbet's splints on the lower extremities, which permit early weight bearing and movement in the joints, is advocated, but proper application is necessary and appears rather difficult. Luxations are considered in a brief but descriptive section. The operative indications and technic for each fracture are given in a separate section. The advisability of putting in a foreign body and the type best suited for holding each fracture are discussed at length. There are well chosen illustrations of operative technic and the use of splints. The authors are conservative and advocate operative reduction of fractures only when other methods have failed.

EARLY CONCEPTIONS AND TESTS OF INTELLIGENCE. By Joseph Peterson, Ph.D., *Professor of Psychology,* George Peabody College for Teachers. Cloth. *Price, $2.16. Pp. 320. Chicago:* World Book Company, 1925.

Within quite recent times tests of intelligence have come to play an important part not only in psychologic and psychiatric work but also in social, pedagogic and industrial life in general. So rapid and overwhelming have been their growth and acceptance that it is difficult to think of getting along without them, even though there are still wide divergences of opinion as to their exact value. Yet, it is a fact that many persons, even among those who employ such test methods daily, have little or no knowledge of their origin and evolution. Nevertheless, much is to be learned in this as in other fields of scientific work from a study of the historical background and the difficulties overcome. Dr. Terman is unquestionably right when he states in an introduction to the book that lack of this information is frequently the cause of misunderstandings and of inaccuracies of application and interpretation of the results of tests. The task of supplying this deficiency in a form suitable for college students has been undertaken with admirable success by Dr. Peterson. The story of the concept of intelligence is traced with excellent selection of data from the earliest Greek writers down to the time of the death of Binet in 1911. The work of this French genius and his collaborators of necessity occupies a large place in this volume, though full appreciation is accorded to other investigators in many countries. To Binet belongs the credit of initiating and establishing tests designed to estimate general as opposed to special abilities to which most of his predecessors had devoted their efforts. The criticisms and objections of contemporaries are outlined in simple language by Dr. Peterson without bias or partisanship. The book is written in simple, readable style, the selections of facts are made evidently by one who is thoroughly conversant with his subject, and there is a praiseworthy absence of dogmatism or overenthusiasm. At the end of each chapter, problems are proposed that require wider reading for their solution and lead the student into thinking for himself; the bibliography is admirable. The book is a distinct contribution to education in psychology, a subject from which unfortunately too many physicians have held aloof, and can be recommended without hesitation to every one who is in any way interested in the giving or interpreting of intelligence tests.

Medicolegal

Test of Hospital Being a Charitable Institution

(Nuns of Third Order of St. Dominic v. Younkin et al. (Kan.), 235 Pac. R. 869)

The Supreme Court of Kansas, in reversing a judgment that was rendered for the defendants, and directing that one be entered instead for the plaintiff, in this suit to enjoin county officials from levying and collecting taxes on a hospital owned by the plaintiff, says that the test which determines whether a hospital is charitable is whether it is maintained for gain or profit. If a hospital is conducted for the use and profit of persons engaged in the practice of medicine and surgery, or as an adjunct to a medical college conducted for the profit of its owners, it cannot be regarded as a charitable institution, and is subject to taxation. But when an institution is incorporated for benevolent purposes without capital stock, and no dividends are declared or paid, and it conducts a hospital, and all the earnings of the hospital from pay patients, gifts, devises, bequests or whatever source are used in the maintenance, extension and improvement of the hospital, which admits patients without regard to race, creed or wealth, it is uniformly held that such hospital is conducted exclusively for charitable purposes. The fact that it charges and receives pay for patients able to pay does not detract from the charitable nature of the service rendered. Nor does the fact that the hospital has been able to increase the value of the plant from money received from pay patients and donations detract from its charitable purposes. If these incomes from pay patients and donations are used for the purpose of caring for or relieving the sick or disabled and increasing the facility of the institution for that purpose, and are not used for the purpose of declaring dividends or the financial profit (other than the paying of necessary operating expenses) of those connected with or having charge of the institution such use is simply an extended use for charitable purposes.

Validity of Sterilization Law—Physicians to Testify

(Smith v. Command, Probate Judge (Mich.), 204 N. W. R. 140)

The Supreme Court of Michigan holds that Act 285, Public Acts of Michigan of 1923, designed to authorize the sterilization of mentally defective persons, deemed to include idiots, imbeciles and the feebleminded but not the insane, is—measured by the purpose for which it was enacted and the conditions that warranted it, and justified by the findings of biologic science—a proper and reasonable exercise of the police power of the state. The statute does not violate the constitutional provision that cruel or unusual punishment shall not be inflicted, there being no element of punishment involved in the sterilization of feebleminded persons. In this respect it is analogous to compulsory vaccination. Both are nonpunitive. It is therefore plainly apparent that the constitutional inhibition against cruel or unusual punishment has no application to the surgical treatment of feebleminded persons. It has reference only to punishments inflicted after convictions of crimes. The methods provided by the statute to accomplish its purpose are not cruel or inhuman. It requires treatment by roentgen rays or the operation of vasectomy on males or salpingectomy on females, or other treatment as may be least dangerous to life. It is clearly apparent that the methods provided by the statute for carrying out its purpose are not unreasonable, cruel or oppressive, and that the results are beneficial both to the subject and to society.

Nor does the statute make an unconstitutional classification in excepting the insane. In making this classification the legislature did not carve a class out of a class, but took a natural class of defectives whose children would have an inherited tendency to feeblemindedness. It is as reasonable and no more class legislation than the compulsory vaccination of those who have been exposed to smallpox. The feebleminded include distinct types of which the imbeciles and idiots are lower orders. The insane do not belong in this class, and there are apparent good and substantial reasons why the legislature differentiated between them. It is reasonable to suppose that the legislature knew that the insane have less of the sexual impulses than the feebleminded, and that biologic science has not so definitely demonstrated their inheritable tendencies. But the second division of the classification, bringing within the operation of the law only those of the feebleminded class who are unable to support any children they might have, and whose children probably would become public charges by reason thereof, carves a class out of a class and is subject to constitutional objection. However, the first division being a complete classification in itself, its constitutionality is not in any way affected by that of the second. Furthermore, this statute does not violate the "due process of law" clause of the constitution, nor the provision of the state constitution that institutions for the benefit of the feebleminded shall always be fostered and supported. In the opinion of the legislature, additional legislation was needed to prevent the spread of feeblemindedness. In terms the statute specifically applies to inmates of such institutions.

There is no provision for the filing of certificates made by the physicians. The procedure is in no way similar to that provided for on petitions to commit to an insane asylum. The intent is clear that the physicians shall appear in court at the hearing and submit to an examination by the court, the prosecuting attorney, the guardian or other person on whom notice has been served. The certificates filed in this case were simply statements in the language of the statute that the facts were present which the court must find to warrant making the order appointing a competent physician to treat the plaintiff by roentgen rays, or by vasectomy, or by other treatment that may be least dangerous to life, in order to render him incapable of procreation. It is not for the physicians to determine the question before the court. While, of course, they may express their opinions concerning it, the reasons for such opinions should be inquired into in order that the court may, after due consideration thereof and of the proof submitted, as provided for in the statute, determine whether the person examined should be dealt with under the terms of the act. No more important duty devolves on a probate judge than that imposed on him under this act. The responsibility of determining that a surgical operation shall be performed on a human being who is mentally defective "for his own welfare or the welfare of the community" rests on him, and it may properly be discharged by him only on the most painstaking and thorough investigation of the facts disclosed on the hearing.

Validity of Disposition of Property by Aged Persons

(Coughlin et al. v. St. Patrick's Church of Tama (Iowa), 203 N. W. R. 812)

The Supreme Court of Iowa, in holding valid the disposition which one Coughlin made of his property when he had reached a time in life and was in a physical condition in which he knew he could not live very long, says that mere old age and a certain degree of physical and mental impairment incident thereto are not sufficient in the law to deprive one of the capacity to convey property by deed or will. While courts should be and are zealous to see that the weak and frail are not overreached or taken advantage of, they must be equally zealous to guard the right of every man to dispose of his own property as he sees fit, provided he has sufficient mental capacity to know what property he possesses, and what he desires to do with it, and exercises his free and voluntary will in the disposition of it. It is inevitable that, as a general rule, physical weakness is incident to the approach of old age, and there is of necessity a degree of deterioration of the mental faculties. The step becomes slow and halting and the eyes lose their luster with the onward course of time. Forgetfulness almost inevitably comes as one approaches the shadows of life. The symptoms are familiar and well known. These and other evidences of old age may advance to such a degree that senility results. The mind may be broken and helpless and the person the easy prey of the designing and vicious, and the party may be incompetent to transact business affairs with conscious appreciation of their extent or attendant results. But a disposition of one's property is not to be set aside on the ground of mental incapacity unless the evidence is of such a character as to convince and satisfy a court of equity that the grantor was so lacking in mental ability that he could not reasonably exercise judgment and discretion in regard to the particular business in hand. The shrewdness and alertness of strenuous business competition is not required. Men in good mental condition err in judgment in business transactions, and it is not unknown that financial disasters frequently result. Business transactions are often ill advised, and no hard and fast rule can be laid down by which to measure the exercise of judgment and discretion by one in disposing of his property.

Nonmailable Advertisement of Lying-In Institution

(Dysart v. United States (U. S.), 4 Fed. R. (2d) 765)

The United States Circuit Court of Appeals, Fifth Circuit, in affirming a judgment of conviction of defendant Dysart, who was charged with having knowingly deposited and caused to be deposited in a post office for mailing a letter and printed card inclosed in an envelop, which letter and card were alleged to be obscene, lewd and lascivious, says that the vicious tendency of a letter or publication in question may be the result of innuendo or suggestion, of its being so devised as to have capacity to give rise to illicit sexual desires or thoughts. In behalf of the accused it was contended that the charged advertising of his maternity or lying-in institution was incapable of having such a tendency. It is not doubted that it is permissible to use the mails in making known the existence and claimed merits of such an institution. But an advertisement of such an institution is nonmailable if it is so devised as to serve the purpose of implanting lewd or lascivious thoughts in the minds of those to whose notice it is directly brought. The court thinks that a denial of the power or influence of suggestion would be involved in affirming that statements to the effect that a named institution is a private retreat for unmarried pregnant women coming from the best families and affords to such females a convenient means of concealing the results of their missteps is incapable of giving rise to sexual thoughts or desires in the minds of unmarried females to whose notice such statements are brought. Commendation of existing facilities for avoiding possible unpleasant social consequences of conduct in pursuance of illicit sexual desires may be the means of covertly suggesting such desires to those whose actions are largely the result of social influences and restraints. The method adopted to bring to the notice of unmarried females an institution described as "specially a private retreat for unmarried pregnant women" may be inconsistent with customary standards of decency, though the use of indecent or obscene language is avoided.

Society Proceedings

COMING MEETINGS

American Pharmacological Society, Cleveland, Dec. 28-31. Dr. E. D. Brown, University of Minnesota, Minneapolis, Minn., Secretary.

American Physiological Society, Cleveland, Dec. 29-31. Dr. W. J. Meek, Science Hall, Madison, Wis., Secretary.

American Society for Experimental Pathology, Cleveland, Dec. 28-30. Dr. E. B. Krumbhaar, Philadelphia General Hospital, Philadelphia, Sec'y.

American Society of Biological Chemistry, Cleveland, Dec. 28-30. Dr. D. W. Wilson, University of Pennsylvania School of Medicine, Philadelphia, Secretary.

Federation of American Societies for Experimental Biology, Cleveland, Dec. 29-31. Dr. Walter J. Meek, Science Hall, Madison, Wis., Sec'y.

Isthmian Canal Zone, Medical Association of, Ancon, Jan. 19. Dr. David L. Robeson, Ancon Hospital, Ancon, Secretary.

Philippine Islands Medical Association, Manila, Dec. 16-19. Dr. Isabelo Concepcion, College of Medicine and Surgery, Manila, Secretary.

Porto Rico, Medical Association of, Coami, Dec. 14-15. Dr. R. M. Suarez, Box 314, Santurce, Secretary.

Radiological Society of North America, Cleveland, Dec. 7-11. Dr. Robert J. May, St. Luke's Hospital, Cleveland, Secretary.

Society of American Bacteriologists, Madison, Wis., Dec. 29-31. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.

Southern Surgical Association, Louisville, Ky., Dec. 15-17. Dr. Hubert A. Royster, 423 Fayetteville Street, Raleigh, N. C., Secretary.

Western Surgical Association, Wichita, Kan., Dec. 18-19. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Minn., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to The Journal for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Electrotherapeutics and Radiology, New York

43: *327-358* (Sept.) *1925*

Factors in Establishment of Sound Physiotherapeutic Practice. W. T. Johnson, Philadelphia.—p. 329.
Hemorrhoids and Anal Fissures with Special Reference to Desiccation Method of Treatment. W. I. Clark, Philadelphia.—p. 329.
Electrosurgery. W. D. McFee, Haverhill, Mass.—p. 331.
Terminology of Electrothermic Methods. J. D. Morgan, Philadelphia.—p. 335.
History of American Electrotherapeutic Association. E. B. Snow and G. B. Massey, Philadelphia.—p. 338.

American Journal of Medical Sciences, Philadelphia

170: *469-624* (Oct.) *1925*

Relationship of Sympathetic Innervation to Tone of Skeletal Muscle. J. I. Hunter, Sydney, Australia.—p. 469.
*Cancer. II. Human Intestinal Parasites as Cancer Inciting Factor; Significance of Precancerous State. W. Meyer, New York.—p. 481.
*Carcinoma of Esophagus. W. C. Buchbinder, Chicago.—p. 496.
*Form of Acute Hemolytic Anemia Probably of Infectious Origin. M. Lederer, *Brooklyn, N. Y.—p. 500.*
*Clinical Value of Some Recent Tests for Liver Function. H. F. Shattuck, J. C. Browne and M. Preston, New York.—p. 510.
*Icterus Index. J. V. Barrow, E. L. Armstrong and W. H. Olds, Los Angeles.—p. 519.
*Mitral Stenosis After Fifth Decade of Life. E. P. Boas and D. Perla, New York.—p. 529.
*Atypical Tabes Dorsalis (Forme Fruste). A. E. Bennett, Omaha.—p. 538.
Glucose Tolerance Tests in Children. M. E. Fries and J. L. Kohn, New York.—p. 547.
Body Weight in Relation to Health and Disease. E. S. DuBray, San Francisco.—p. 564.
Physical Defects as Revealed by Periodic Health Examinations. L. I. Dublin, E. L. Fisk and E. W. Kopf, New York.—p. 576.

Human Intestinal Parasites and Cancer.—Meyer says that numerous, and among themselves unrelated, factors, when impinging on human tissue, are apt to irritate it and to set up therein a chronic morbid condition, from which a sequence of events culminating in cancer has been observed sometimes to arise. Such potentially cancerous conditions have, therefore, been termed a "precancerous state" and the factors inducing them, "cancer inciting factors." Cancer inciting factors, while capable of initiating a precancerous state, evidently do not govern the behavior of the tissue during this state, for the suspicious condition of the tissue may be aggravated, or it may become stationary, or it may recede after the initiatory irritation has ceased to exist. A precancerous state appears always to be interposed between the taking effect of the cancer inciting factor and the state of malignancy, so that in all probability there is no direct relation, if any, of the two events to each other as of cause and effect. The primary irritant, the cancer inciting factor, is not a "cause of cancer." There is no knowing whether the chronic condition which it may initiate under certain circumstances in the tissue will ever mature into definite malignancy, or will not do so.

Carcinoma of Esophagus.—In a series of fifty-four necropsies in cases of carcinoma of the esophagus, one third of the esophagus was *involved by the tumor growth. Buchbinder* says that evidence that the disease begins at the site of the tracheal bifurcation is only presumptive. There is some relation between carcinoma of the esophagus and the region of the bifurcation. Either the growth originates there or spreads more rapidly into it. It is quite impossible to recognize the so-called early case. At the time of the first complaint of the patient, there may already be extensive metastatic infection. The average computed life history of the disease is five and one-half months.

Acute Hemolytic Anemia of Infectious Origin.—Three cases of a type hitherto undescribed in the available literature, characterized by sudden onset, fever, leukocytosis and severe anemia, are described by Lederer. Alterations in the blood similar to those seen in pernicious anemia were found. Evidences of rapid and enormous blood destruction were present. The behavior suggests an infection with selective action concentrated on the reticulo-endothelial system. Prompt and permanent recovery followed a single transfusion of unmodified blood.

Value of Liver Function Tests.—The studies on liver function tests made by Shattuck, Browne and Preston would seem *to indicate that the icterus index is the most useful single* functional liver test for clinical work. The Rowntree-Rosenthal dye test is of supplementary value in measuring liver function. For clinical work it is more complicated, more objectionable to the patient and may not be entirely free from danger. The Fouchet test proved unreliable for detecting minor grades of bilirubinemia. In other respects the van den Bergh test serves very well in its place. The van den Bergh test has distinct value in studying liver function, but the extent must be determined by the icterus index or dye test. It helps as a specific qualitative test for bile pigment to control readings of the icterus index in the zone of latent jaundice. It distinguishes between hemolytic and obstructive jaundice.

Icterus Index Best Test of Liver Function.—Barrow, Armstrong and Olds assert that the icterus index is the test of choice for the quantitative estimation of bilirubinemia for the reason that it is simple, accurate, and of definite clinical value. There is no untoward effect or danger to the patient in its use. The Widal hemoclastic crisis probably tests the proteopexic function of the liver, which is allied to, but different from, the bile forming function. Liver function is probably closely associated with the behavior of the blood stream leukocytes. Both of these come under the influence of any foreign protein introduced either through the intestinal tract or through the tissues elsewhere. It seems probable that the leukocyte tests of today may be in reality liver function tests. Extreme leukocytosis in the presence of bile is probably the result of a high grade hemopoietic stimulant acting not because of the presence of bile, but in spite of it. The icterus index is, in the last analysis, a measure of bilirubin in the blood stream. Its clinical interpretation must depend on all the factors that will produce this condition. It is a valuable aid in diagnosis, prognosis and treatment. The test is neither infallible nor specific in the diagnosis of any one disease, but as other clinical tests are rated, this one has a high marking.

Age Incidence of Mitral Stenosis.—An analysis made by Boas and Perla of 183 cases of mitral stenosis shows that mitral stenosis is not uncommon in the sixth and seventh decades of life. In most instances it is the end-result of a rheumatic infection in childhood or early adult life. The mitral narrowing is not extreme, and the lesion is nonprogressive or very slowly progressive, so that significant symptoms do not develop for many years. Women with such a condition may apparently undergo many pregnancies without distress and without injury to the heart. In a certain number of cases of mitral stenosis in elderly persons, the valvular lesion cannot be interpreted as the end-result of an ancient endocarditis, but must be regarded as a primary artherosclerosis of the mitral valve, and particularly of the auriculoventricular ring. The characteristic pathologic finding is a widespread calcification of the mitral ring encroaching on the lumen of the auriculoventricular opening with thickening and, at times, calcification and fusion of the valve cusps.

Atypical Tabes Dorsalis.—Bennett is of the opinion that atypical, or "forme fruste" type, tabes is the most frequently missed form of the disease. Gastric crisis in this variety often leads to unnecessary abdominal operations. Incomplete histories, careless examinations and infrequent spinal punctures in doubtful cases account for most errors. Gastric crises occur in from 10 to 20 per cent. of all cases of tabes dorsalis. Reliable reports indicate that more than 10 per cent. of tabetics have needless operations performed at least once on account of a mistaken diagnosis. There are frequent reports in the literature of patients having had four or five abdominal operations when the cause of the symptoms was root pains of syphilis. The classic signs of tabes are absent in approximately one-half the early cases, when abdominal pains may be present. The knee jerks are normal or exaggerated in at least 25 per cent. of early cases. The same applied to ataxia, Argyll-Robertson phenomenon and other later signs. Approximately 10 per cent. of the patients remain atypical throughout the entire course of the disease. A complete life story of the individual with a careful neurologic examination and a spinal fluid study should be made when there is the slightest doubt as to a diagnosis. In patients presenting recurrent abdominal attacks with no relief from previous operations, the possibility of an atypical form of tabes dorsalis should be very firmly impressed on the minds of surgeons in order to decrease the all too frequent incidence of unnecessary operations on tabetics.

American Journal of Obstetrics and Gynecology, St. Louis

10: 461-618 (Oct.) 1925

*Inguinal Endometriosis (Often Reported as Endometrial Tissue in Groin, Adenomyoma in Groin, and Adenomyoma of Round Ligament). J. A. Sampson, Albany, N. Y.—p. 462.
An Illustrated History of Low or Cervical Cesarean Sections. J. B. De Lee, Chicago.—p. 503.
*Puerperal Infections and Their Treatment. J. O. Polak, Brooklyn.—p. 521.
*Influence of Male Sex Gland on Female; Determination of Sex Ratio of Offspring. F. Kovacs, Baltimore.—p. 527.
*Cystic Lesions of Possible Endometrial Origin in Appendix; Four Cases. G. W. Outerbridge, Philadelphia.—p. 545.
*Purpura Complicating Pregnancy. S. Rushmore, Boston.—p. 553.
Treatment of Uterine Fibromyomas. J. G. Clark and F. B. Block, Philadelphia.—p. 560.
Deities Concerned with Childbirth Among Ancient Peoples. E. A. Shumann, Philadelphia.—p. 570.

Inguinal Endometriosis.—In eight cases of endometriosis of the intraperitoneal portion of the round ligament (so-called "adenomyoma" of that structure) reported by Sampson, a similar invasion of other pelvic structures was also present. The distribution of these lesions was similar to that found in the implantation of cancer in peritoneal carcinosis secondary to carcinoma of the pelvic organs. In four of these cases, an endometrial hematoma of one of the ovaries was also present (both ovaries in one patient). In three others a small amount of endometrial tissue was present in one or both ovaries, with the development of an endometrial cyst or hematoma. In the remaining one, endometrial tissue was not found in either ovary. Sampson believes that in all eight cases the peritoneal endometriosis was mainly of implantation origin, primarily from epithelium carried through the tubes during menstruation, and secondarily from the menstrual reaction of endometrial foci on the surface of the peritoneum or the perforation of an ovarian hematoma. A study of the whole subject of pelvic endometriosis suggests that at times metastasis occurs through the lymph vessels and possibly through the vein, and that endometrial tissue may reach the groin and other parts of the body through these channels.

Chemotherapy of Puerperal Infection Ineffective.—Polak discusses the value of acriflavine, gentian violet and mercurochrome-220 soluble in the treatment of puerperal infection. It is his firm belief that the patients supposed to have recovered as a result of the employment of injections of these chemical solutions would have done so from the intravenous injection of any foreign or protein substance; for it is well known that such intravenous medication will always raise the leukocyte resistance temporarily, but fails to maintain it. The puerpera who recovers from a puerperal infection, whether it be in the blood stream or in the local tissues, does so as a result of a reaction sufficient to inhibit the further growth of the bacterial invader. It has been shown, experimentally and clinically, that these dyes in a concentration of 1:10,000, which is the highest concentration compatible with life, irritate the liver, kidney and heart, and this results in a definite pathologic change in each of these organs; that the intravenous use of these dyes will give only a temporary increase in the leukocytosis, and that this increase is not maintained for a longer period than twenty-four hours. On the other hand, blood transfusion does increase the cellular elements of the blood, its alkalinity and the alkalinity of the tissue fluids and thus increases the reaction against bacteria, as well as improving the function of the several eliminative organs.

Influence of Male Sex Gland on Female.—An experimental study was made by Kovacs to determine the sex ratio of the offspring. He found that it can be changed to the advantage of the male by subcutaneous injections with testis tissue. This change of the sex ratio can be increased in this direction if the treatment begins eight days before mating. The greatest influence on the sex ratio was obtained by transplantation of testis into the female rat, performed before the mating. The subcutaneous injections of testis tissue of the same species into the female rat effect a temporary sterility for a period of from three to eleven weeks. Steinach's dogma concerning the antagonism of the gonads is held to be incorrect. A successful transplantation of testis into adult female rats can be obtained without first removing the ovaries. Such females can become pregnant, give birth to young and raise their litters normally. The functioning testis tissue transplanted into the female neither has a significant influence on the biologic function nor changes the morphologic structure of the ovaries.

Cystic Lesions of Appendix.—Outerbridge describes four appendixes showing rather remarkable and unusual lesions, in the form of cystlike cavities of varying sizes, some empty, some containing apparently blood or other débris, some lying immediately in the muscular or serous coats of the appendix or in the mesoappendix, others being surrounded by a small amount of loose cellular tissue. All were in the outer layers, having apparently no relation whatsoever to the mucosa. All were lined by a single layer of columnar epithelium, varying somewhat in height in different instances, and all were associated with definite evidences of marked chronic or subacute inflammatory changes in the appendix. All occurred in women.

Purpura Complicating Pregnancy.—Rushmore's case belongs to the group known as simple purpura, in which there is hemorrhage into the skin only. But, it is peculiar in this respect, that the patient complained of "terrible" itching. There was, at the time she was seen, no evidence of urticaria, or any eruption except petechiae and ecchymoses, neither was there history of any other change in the skin. However, the intense itching suggests strongly that the case belongs with the urticarias or angioneurotic group. It followed an infection (bronchitis) and was accompanied by fever and increased pulse rate. In this connection, the spontaneous termination of pregnancy is especially interesting. It is said to be the only case of pregnancy complicated by this form of purpura noted in the literature.

American Journal of Physiology, Baltimore

74: 225-496 (Oct. 1) 1925

*Studies on Physiology of Sleep. III. Effect of Muscular Activity, Rest and Sleep on Urinary Excretion of Phosphorus. N. Kleitman, Chicago.—p. 225.
*Studies of Physiology of Liver. XII. Muscle Glycogen Following Total Removal of Liver. J. L. Bollman, F. C. Mann and T. B. Magath, Rochester, Minn.—p. 238.
*Inhibition in Ovulation in Fowl by Intraperitoneal Administration of Fresh Anterior Hypophysial Substance. A. T. Walker, Berkeley, Calif.—p. 249.
Effects of Variation in Frequency of Stimulation of Skeletal, Cardiac and Smooth Muscle with Special Reference to Inhibition. H. O. Veach and J. R. Pereira, Boston.—p. 257.
Decerebrate Rigidity and Plastic Tonus After Removal of Lumbar Sympathetics. W. J. Meek and A. S. Crawford, Madison, Wis.—p. 285.
Conditions of Activity in Endocrine Glands. XVII. Nervous Control of Insulin Secretion. S. W. Britton, Boston.—p. 291.
Spectrophotometric Analysis of Commercial Insulin. E. J. Baldes and S. F. Adams, Rochester, Minn.—p. 309.
Some Phenomena of Decerebrate Rigidity. H. C. Coombs and J. Tulgan, New York.—p. 314.
*Effect of Histamin on Cerebrospinal Fluid Pressure. F. C. Lee, Baltimore.—p. 317.
*Differences of Capillary Activity. F. C. Lee, Baltimore.—p. 326.
Muscular Exercise Under Low Barometric Pressure. I. Consumption of Oxygen and Oxygen Debt. E. C. Schneider and R. W. Clarke, Mitchel Field, L. I., N. Y.—p. 334

*Phenolphthalol; Its Preparation and Reaction Toward Oxidases and Peroxidases. G. D. Buckner, Lexington, Ky.—p. 354.
*Egg White vs. Casein as Source of Protein in Diet of Rats. H. S. Mitchell, Battle Creek, Mich.—p. 359.
Hydrogen Ion Concentrations and Basicity of Egg Yolk and Egg White. D. J. Healy and A. M. Peter, Lexington, Ky.—p. 363.
*Is Prolonged Bed Rest a Prerequisite for Measurement of Basal Metabolism? F. G. Benedict, Boston, and E. E. Crofts, South Hadley, Mass.—p. 369.
Superimposed Respirations or Cheyne-Stokes Breathing Caused by Training. P. F. Swindle, Milwaukee.—p. 381.
New Method of Assaying Potency of Female Sex Hormone Based on Its Effect on Spontaneous Contraction of Uterus of White Rat. R. T. Frank, C. D. Bonham and R. G. Gustavson, Denver.—p. 395.
Are Reflexes from Large Veins or Auricle of Importance in Regulation of Circulation? A. C. DeGraff and J. Sands, Cleveland.—p. 400.
Effects of Progressive Anoxemia on Heart and Circulation. J. Sands and A. C. DeGraff, Cleveland.—p. 416.
Factors Influencing Excretion of Urea. II. Diuresis and Caffein. H. Bourquin and N. B. Laughton, Vermilion, S. D.—p. 436.
Autonomic Rhythm of Turtle Heart Strips as Influenced by Regional Gradient and Various Conditions. I. Duration of Initial Inhibition of Cardiac Strips. T. Sollmann and Hung Pih Chu. Cleveland.—p. 451.
Id. II. Maximal Tempo, Average Rate and Index of Inhibition. Hung Pih Chu and T. Sollmann, Cleveland.—p. 464.
Id. III. Time-Decadence of Height of Contractions. T. Sollmann and Hung Pih Chu, Cleveland.—p. 474.
Id. IV. Types of Inhibited Rhythms and Luciani Groups. Hung Pih Chu and T. Sollmann, Cleveland.—p. 478.
Secretin. IX. Its Relation to Activity of Skeletal Muscle. N. B. Eddy and A. W. Downs, *Edmonton*, Canada.—p. 489.

Effect of Sleep on Phosphorus Excretion.—It is suggested by Kleitman's studies that the increase in the excretion of phosphorus during sleep is due to more complete muscular relaxation in that state.

Physiology of Liver; Blood Glucose; Muscle Glycogen.—Bollman, Mann and Magath are of the opinion that the liver must be regarded as the source of glucose in the blood, and the muscles play little or no part in maintaining the normal level of blood sugar. Following injections of glucose, hypoglycemic dehepatized animals immediately recovered, and if the administration of glucose was continued for some time, muscle glycogen was reformed.

Effect of Hypophysial Substance on Ovulation.—Walker asserts that this inhibition in ovulation is not due to any general systemic toxic effect, since the fowls remained in excellent health and in most cases gained in weight. It appears rather to be due to an injurious effect exerted by the excess of the hypophysial hormone on the developing ova.

Effect of Histamin on Cerebrospinal Fluid Pressure.—Lee found that histamin produced a definite fall in the cerebrospinal fluid pressure in cats and dogs under ether anesthesia. Although the blood capillaries of the viscera have been shown to become markedly dilated in histamin shock, all the evidence indicated that the capillaries of the brain did not react in this way.

Differences of Capillary Activity.—Evidence has been collected by Lee to point out the difference in the behavior of blood capillaries of various organs to the injection of sodium chlorid, histamin, and India ink. The small vessels of the brain did not dilate like the visceral capillaries after histamin was given. Furthermore, they did not indicate the same fluid exchange with crystalloids as the capillaries in organs drained by the lymphatic system. Finally, the passage of particles of India ink from the blood to the lymph vessels of the liver indicated the high degree of permeability in the blood vascular bed of that organ.

Phenolphthalol.—From the experiments made by Buckner, it seems that phenolphthalol is an excellent reagent for the use of detecting oxidases and peroxidases but that, because of the added trouble in making it, phenolphthalein is preferable. Human blood can be detected with certainty in dilution of 1 : 5,000,000 by the peroxidase test with phenolphthalol.

Protein Value of Egg White and Casein.—The relative values of egg white and casein have been determined by Mitchell, showing that egg white is just slightly less adequate than casein for the growth of young rats. When egg white furnishes 18 per cent. of protein in a standard diet supplemented with yeast, it is an adequate source of protein and especially adapted for use in low mineral diets.

Prolonged Bed Rest Before Basal Metabolism Determination Unnecessary.—The results of observations made by Benedict and Crofts would seem to justify making basal metabolism experiments after a half hour's repose, even if the patient leaves home and goes directly to the laboratory or hospital. The customary sojourn in the hospital over night, prior to such tests, seems therefore to be unnecessary.

American Review of Tuberculosis, Baltimore

12: 87-172 (Oct.) 1925

Vascular Supply of Bronchial Tree. W. S. Miller, Madison, Wis.—p. 87.
Artificial Pneumothorax with Collapse Under Low Intrapleural Pressures. G. F. Aycock, Denver.—p. 95.
Circulatory Changes in Artificial Pneumothorax. R. A. Bendove, Bedford Hills, N. Y.—p. 107.
*Tubercle Bacillus Septicemia in Horse Caused by Bacilli of Avian Origin. E. A. Watson and L. M. Heath, Ottawa, Canada.—p. 116.
*Agglutination of Tubercle Bacilli. J. Freund, Asheville, N. C.—p. 124.
*Complement Fixation in Tuberculosis. III. Nature of Antigen. M. Pinner, Chicago.—p. 142.
*Effect of Mercurochrome in Experimental Tuberculosis of Rabbit. H. J. Corper, S. Mebel and R. Silver, Denver.—p. 156.

Tubercle Bacillus Septicemia.—The term tubercle bacillus septicemia is used by Watson and Heath to denote a form of bacillary infection, so acute, so intense and so diffuse as to cause a fatal termination before any apparent localization of infection or development of miliary tubercles had taken place. No similar case is said to be on record.

Agglutination of Tubercle Bacilli.—The agglutination of tubercle bacilli and its constituents by electrolytes and by immune serum was studied by Freund. His observations support the assumption of a protein surface of the bacilli.

Complement Fixation in Tuberculosis: Nature of Antigen.—Comparative titration of more than seventy preparations derived from tubercle bacilli proved that the main complement fixing substances are closely associated with that fraction of the bacilli which is practically insoluble in acetone, ether and chloroform and soluble in alcohol. It is felt by Pinner that no proof has been given that the alcohol-soluble substances contain the only antigenic principle, but no tubercle bacillus extract from which these substances have been removed retained a sufficient amount of antigenic power to make it fit as an antigen in complement fixation. Evidence is introduced that the degree of dispersion plays an important rôle in the antigenic value of lipoidal tuberculosis antigens. The protein substances exert an inhibiting influence on the lipoids in complement fixation. No evidence has been found for the assumption that certain serums from tuberculous patients react only with protein and others only with lipoidal antigens.

Effect of Mercurochrome in Experimental Tuberculosis Nil.—Corper et al. found that mercurochrome-220 soluble given intravenously daily, over long periods, has no appreciable effect on the tuberculosis developing in rabbits after the intravenous injection of suspensions of virulent human or bovine tubercle bacilli, regardless of whether treatment is begun immediately or a week after infection. The authors conclude that the local tissue toxicity of mercurochrome-220 soluble in relatively low concentrations and its poor tuberculocidal and bacteriostatic efficiency would not seem to justify its use in the local treatment of tuberculous empyemas or pulmonary cavities.

Annals of Clinical Medicine, Baltimore

4: 183-284 (Sept.) 1925

*Rupture of Septum Ventriculorum. C. F. *Martin and* T. R. *Waugh*, Montreal.—p. 183.
*Incidence of Bacterial Inflammatory Process in Cardiovascular Defects: Malformed Semilunar Cusps. M. E. Abbott, Montreal.—p. 189.
Parathyroid Hormone: Physiologic Action. J. B. Collip, Alberta, Canada. —p. 219.
*Significance of Multiple Cutaneous Reactions Observed in Hay-Fever Subjects. H. S. Bernton, *Washington*, D. C.—*p. 231.*
Ochronosis; with Associated Disease of Suprarenals. W. C. Hunter, Portland, Ore.—p. 250.
Use of Dreyer Method of Vital Capacity Determinations in Examination of Patients. J. M. Swan, Rochester, N. Y.—p. 260.

Rupture of Septum Ventriculorum.—Less than twenty-five cases of this condition are *on* record. Martin and Waugh report one case, occurring in a man, aged 52, who had previously been in perfect health, and was of good physique and active in business. Suddenly he suffered an acute and unexpected precordial pain. He compared it to that of gasping after a severe effort. This sensation subsided in a few minutes, and he proceeded to his office duties. During the rest of the day, he was free from symptoms, but in the evening the same gasping sensation returned. He attended a meeting in the evening, and, though feeling unwell, had no return of the sensations. After returning home, the same sensations came on with renewed force. The next day he visited his doctor. A careful examination revealed no signs of cardiac abnormality, although no effort tolerance test was made. He was sent to bed, however, and late that afternoon, for the first time, signs in the heart appeared. The pulse was more rapid; an indeterminate murmur was heard over the precordial area; the temperature was raised, and signs of infiltration in the right apex, with progressively increasing dyspnea, were noted. In the lungs there was evidence of increasing consolidation, and this, with high temperature and rapid respirations, suggested a complicating pneumonia. These conditions persisted without very much change until eleven days after the onset of the illness, when death occurred suddenly. Throughout the illness, except for a sense of oppression and indefinite precordial pain, there was no suggestion of anginal attack until the agonal distress at the end, when severe pain was complained of immediately before death. While the diagnosis suggested some possible rupture of the septum, it was felt that the most important feature was the progressively developing pneumonia, and yet, as the pathologic record shows, no genuine pneumonia existed, but merely a passive congestion of the lung with splenization. The necropsy revealed a rupture of the interventricular septum at the apex of the heart. It is evident that a gradual thrombosis had occurred in the left coronary artery and had been the initial cause of the rupture. From the character of the lesion, it was apparently syphilitic in origin, although no history of syphilis was admitted and no Wassermann reaction was obtained. Obviously, from the pathologic findings, there was at first a very small foramen which gave rise to the first symptoms and the physical signs, while the larger rupture must have occurred immediately before death. Characteristic of this condition from the clinical standpoint is the sudden development of a loud extensive murmur, referable in no way to any one valve or even a multiple valvular lesions; its maximum intensity over the immediate precordial area is likewise a point worthy of notice.

Incidence of Infective Endocarditis in Cardiac Anomalies.—The literature on this subject is reviewed by Abbott, and the incidence of infective endocarditis in 555 cardiac anomalies "of clinical significance" is noted. The highest frequency is in malformed cusps and ventricular septal defects, followed by pulmonary stenosis and then patent ductus. It did not occur in the defects in the upper parts of the interauricular septum, probably because of the lack of proximity to the valvular endocardium. Nor was it noted in the extreme cases of congenital cyanosis. Such patients usually die at an early stage. On the basis of the study of the literature, the conclusions are drawn that infective endocarditis is extremely common in patients with cardiac defects who live to maturity; the process is most commonly subacute bacterial and this is especially true of anomalies in the left heart; in septal defects and patent ductus, an acute bacterial infection is relatively more frequent and here the lesion is usually right sided and gives unmistakable evidence, both by this fact and by the presence of infarcts in the pulmonary circulation and absence of these on the systemic side, that the shunt in these abnormal communications is arterial-venous under the ordinary conditions of the circulation in health. Six cases are reviewed, four of which have not been reported previously.

Multiple Cutaneous Reactions in Hay-Fever.—Cutaneous tests with various pollens have been made by Bernton in a series of fifty-seven cases of autumnal hay-fever. Of a total of eighty-two tests performed with pollens of the compositae group, seventy-one, or 86.5 per cent., have proved positive. Of a total of 393 tests performed with other wind borne pollens, seventy-eight, or 19.8 per cent., have proved positive. These positive reactions have been obtained with pollens of twenty-one genera of plants belonging to ten families. These results are illustrative of "secondary or accessory reactions." The practice of desensitizing patients with as many pollen extracts as yield positive cutaneous reactions is said to be as unnecessary as it is unwarranted.

Archives of Otolaryngology, Chicago

2: 217-320 (Sept.) 1925

Surgical Treatment of Facial Paralysis. A. W. Adson, Rochester, Minn.—p. 217.
Pathogenesis of Polyposis Nasi. A. O. Freedman, Montreal.—p. 250.
Bone Conduction After Method of Runge. J. W. Downey, Baltimore.—p. 260.
*Nasal (Sphenopalatine) Ganglion in Relation to Itching in Auditory Canal and to Tinnitus Aurium. S. L. Ruskin, New York.—p. 269.
Bibliography on Acute and Chronic Suppurative Otitis Media, Including Acute Infection of Blood Stream. S. J. Kopetzky, New York.—p. 271.

Nasal Ganglion and Itching in Auditory Canal.—Ruskin has now treated five cases of persistent itching in the external auditory canal in which relief was given by treating the nasal ganglion with local application of a saturated solution of cocain. It is emphasized that the symptom of itching ears can appear without any other indication of nasal ganglion disturbance. In one case of itching sensation in the eyes, often interpreted as a sandy feeling associated with a heaviness of the eyelid, relief was obtained by the same treatment. In some of these cases there have been no recurrences of the itching; in a few there have been recurrences, but they have been extremely mild.

Boston Medical and Surgical Journal

193: 857-898 (Nov. 5) 1925

Diagnosis and Treatment of Biliary Tract Disease. F. H. Lahey, Boston.—p. 857.
Wassermann Test. XIX. Sulpharsphenamin Dermatitis; Case. D. L. Belding and J. Goldman, Boston.—p. 863.
Success in Medicine. H. M. Pollock, Boston.—p. 867.
Treatment of Early Paronychia. W. P. Coues, Brookline.—p. 871.
Paranoia. Traumatic Industrial Accident Case Complicated by Mental Derangement. H. J. Cronin, Cambridge.—p. 872.

Journal of Clinical Investigation, Baltimore

2: 1-116 (Oct. 20) 1925

*Value of Sodium Benzoate Test of Renal Function; Effect of Injury of Liver on Hippuric Acid Synthesis. A. W. Bryan, Rochester, Minn.—p. 1.
*Morning Alkaline Tide of Urine in Normal Persons and in Patients with Nephritis. J. E. McCorvie, Rochester, Minn.—p. 35.
*Orthopnea and Effect of Posture on Rate of Blood Flow. H. Field, Jr., and A. V. Bock, Boston.—p. 67.
Elimination of Carbon Monoxid from Blood. W. C. Stadie and K. A. Martin, New Haven, Conn.—p. 77.
Effect of Anoxemia on Heart. I. Auriculoventricular Conduction. W. H. Resnik, Baltimore.—p. 93.

Value of Sodium Benzoate Test of Renal Function.—Bryan holds that the sodium benzoate test is of value in determining the functional capacity of the kidneys. No other type of affection so definitely and markedly affects its synthesis or elimination. However, a free benzoic acid value above 3 per cent. of the administered dose of sodium benzoate suggests a secondary hepatic lesion, the high value probably being due to the inability of the liver to mobilize glycocoll; it probably should not be construed as reflecting against the ability of the kidney to detoxicate the substance. In other cases the amount of free benzoic acid is probably negligible, clinically speaking. The benzoate test is probably a more delicate indicator of early functional renal disturbance than other tests in common use, and therefore, should be of greatest value in patients with early suspected renal involvement, or in patients whose phenolsulphonephthalein or blood urea tests are still normal or have returned to normal. The test has no particular advantage over other tests in advanced cases, as the technic is more time consuming, although this factor, in a well organized laboratory in an institution where many renal cases are studied is by no means prohibitive.

Morning Alkaline Tide of Urine.—McCorvie reports the results of his investigation of the night specimens and hourly morning specimens of urine in a series of normal and abnormal subjects. Most of the abnormal cases were of renal lesions. Normal subjects, as demonstrated by Leathes and confirmed by the author's experiments, always show a diuresis and an increase in alkalinity during the morning, while abnormal subjects may react like the normal, or show limitation, either partial or complete, of either or both. In addition, among the abnormal subjects examined, there were a few with a high initial alkalinity and an acid tide during the morning. The specific gravity may show little variation even with a diuresis within normal limits, an alkaline tide or both. Cases with no alkaline tide are usually severe clinically. An acid tide is of grave prognostic import. The curve of the p_H figures parallels that of the alkalinity percentage. In the cases reported here, both normal and abnormal, a higher p_H figure was always accompanied by increased relative carbon dioxid and a more acid urine by a decrease in carbon dioxid. The phosphates of normal subjects, as demonstrated by Fiske, have an initial drop followed by a late rise during the morning. In the present series the night specimen was found to have a much lower phosphate content in abnormal than in normal subjects. The results of these investigations show that this test may be of clinical value from the point of view of diagnosis and prognosis.

Effect of Posture on Blood Flow.—Data showing a diminution in the rate of blood flow in the upright position, thought to be due to an effect of gravity, impeding the return of venous blood to the heart, are presented by Field and Bock. The manner in which the diminished blood flow in the upright position may reduce dyspnea by relieving the congestion in the pulmonary circulation is discussed.

Journal of Comparative Psychology, Baltimore

5: 345-416 (Oct.) 1925

Static Equilibrium of Airplane Pilots. G. Brammer, Stanford University, Calif.—p. 345.
Value of *Preliminary Period* of Feeding in Problem Box. C. J. Warden, New York.—p. 365.
Reproduction of Guinea-Pigs. G. T. Avery, Stanford University, Calif. —p. 373.
Learning by White Rats of Inclined Plane Maze. J. F. Dashiell and H. A. Helms, Chapel Hills, N. C.—p. 397.
Relative Strength of Sex: Hunger Motives in Albino Rat. C. Tsai, Shanghai, China.—p. 407.

Journal of Urology, Baltimore

14: 313-428 (Oct.) 1925

Indications for Vasotomy. E. G. Mark, Kansas City, Mo.—p. 323.
*Vasopuncture; Modification of Vasotomy for Seminal Vesiculitis. B. A. Thomas, Philadelphia.—p. 331.
Injuries Possible Through Vasotomy. W. T. Belfield, Chicago.—p. 349.
*Infections Along Sheath of Vas Deferens. H. C. Rolnick, Chicago.—p. 371.
Case of Prostatic Tuberculosis without Discoverable Lesions in Kidneys or Epididymides. E. L. Keyes, New York.—p. 385.
*End-Result of Hypernephroma. G. G. Smith and A. B. Shoemaker, Boston.—p. 389.
*Incidence of Ureteral Stricture. N. P. Rathbun, Brooklyn, N. Y.—p. 403.
Controlled Diathermy Treatment of Bladder Tumors. J. H. Cunningham, R. C. Graves and W. T. Bovie, Boston.—p. 411.
*Case of Exstrophic Bladder with Neoplastic Implant. J. F. McCarthy and P. Klemperer, New York.—p. 419.

Vasopuncture for Seminal Vesiculitis.—In 1913 Thomas first suggested and performed vasopuncture for medication in seminal vesiculitis, in preference to vasotomy or vasostomy. He injects from 3 to 5 c.c. of 5 per cent. collargol or other colloidal silver preparation, or perhaps 0.25 per cent. chloramin-T. The whole technic is described in detail.

Infections Along Sheath of Vas Deferens.—Rolnick is convinced that the sheath of the vas deferens acts as a means of transmission of infection from the seminal vesicle. This infection can manifest itself as a funiculitis or actually a perivasitis. It can extend to the tunica vaginalis and produce a periorchitis. Bacteria carried along the sheath may infiltrate into the tunica vaginalis propria and produce an orchitis. Idiopathic hydrocele with marked thickening of the parietal tunica vaginalis may develop secondary to a subacute or chronic infection of the seminal vesicles, which is carried along the sheath of the vas deferens.

End-Results of Hypernephroma.—The records of sixty-two cases of hypernephroma were studied by Smith and Shoemaker. Of twenty-seven cases in which the tumor was removed, the operation could be called worth while in nine cases. Six more patients were discharged relieved, but were lost track of. The duration of life in cases not subjected to nephrectomy and the pathologic anatomy of the disease are discussed.

Incidence of Ureteral Stricture.—Rathbun contends that ureteral stricture is far more common than is believed to be the case. He reviews sixty-three cases in which a diagnosis of primary ureter stricture was made. In thirty-four of these the urine was free from pus and sterile. Varying degrees of infection were noted in the remaining thirty-nine cases. In all cases there was dilatation of the uterer above the stricture and in most of them there were evidences of dilatation of the renal pelvis, varying from a slight degree to a well marked hydronephrosis. Practically all of the latter group showed varying degrees of infection, a few having gone over to pyonephrosis with a more or less complete destruction of the kidney. Eleven cases were a part of the pyelitis of pregnancy and the puerperium. Practically without exception this entire group of sixty-three patients were relieved or improved by a line of treatment based on the diagnosis of ureteral stricture.

Vasectomy for Exstrophic Bladder.—McCarthy's patient, aged 47, had a number of operations performed in Europe for exstrophic bladder with indifferent results. McCarthy removed one kidney, the ureter of the remaining kidney was ureterostomized abdominally, and the bladder was completely extirpated. The patient is now perfectly comfortable and has improved physically to a very great degree.

Medical Journal and Record, New York

122: 505-572 (Nov. 4) 1925

Recognition and Treatment of Neurocirculatory Asthenia in Civil Life. G. M. Piersol, Philadelphia.—p. 505.
Prognosis in Cancer. L. Herly, New York.—p. 509.
Dysentery, Malaria, Intestinal Worms and Other Tropical Diseases. G. B. Lake, Chicago.—p. 513.
Clinical Aspects of Steinach Operation. H. Benjamin, New York.—p. 515.
Can Life be Saved by Transplanting an Organ? C. Deedera, New York. —p. 519.
Skeletal Traction in Fractures. C. S. James, Los Angeles.—p. 520.
Observations on Eastern Clinics. J. A. Mattison, Sawtelle, Calif.—p. 522.
Narcosis by Ethylidene Chlorid; Methylene Chlorid and Their Mixtures. D. M. Rossiysky, Moscow, Russia.—p. 524.
Submucosa Dissector. A. J. Graham, Chicago.—p. 527.
New Reloading Needle for Implantation of Radium Emanation in Capillary Glass Tubes. P. E. Durham, New York.—p. 527.
Automatic Transfusion Apparatus Made from Ordinary Ear Douche. S. G. Berkow, Perth Amboy, N. J.—p. 529.
Infections, Infectious Diseases, and Immunization. W. H. Park, New York.—p. 531.
Diabetes Mellitus; Preventive Measures and Early Diagnosis. H. O. Mosenthal, New York.—p. 534.
Asthma and Preasthmatic Conditions. R. A. Cooke, New York.—p. 537.
Presurgical Conditions, Including Cancer. E. H. Pool, New York.—p. 540.
Periodic Health Examinations from Viewpoint of Endocrinology. W. Timme, New York.—p. 543.
Skin and Syphilis. H. Fox, New York.—p. 545.
Teeth in Olden Times. W. R. Riddell, Toronto, Can.—p. 547.

Military Surgeon, Washington, D. C.

57: 449-560 (Nov.) 1925

Means and Policies Which Will Best Enable This Association to Increase Its Membership and Accomplish Its Patriotic Objects as Stated in Its Constitution. A. C. Carlton.—p. 477.
Work of Industrial Preparedness Section, Supply Division, Surgeon General's Office, War Department. N. L. McDiarmid.—p. 495.
Parasitology as Aid to Medical Officer. W. B. Herms.—p. 517.
Humanity of Chemical Welfare. H. L. Gilchrist.—p. 529.
Critique of Medical Department Bulletin. D. M. Davis.—p. 539.

Philippine Islands Medical Association Journal, Manila

5: 251-288 (Sept.) 1925

*Hydrocephalus Artifically Produced. J. C. Nanagas.—p. 251.
Dangers of Nonoperative Treatment in Hypertrophy of Prostate. J. Eduque.—p. 263.
Anterior Thoracotomy for Chondrosarcoma of Rib; Case. C. Reyes.—p. 268.
*Neo-Arsphenamin in Treatment of Amebic Dysentery. P. T. Lantin.—p. 269.

Artificially Produced Hydrocephalus.—The symptoms and anatomic picture observed by Nanagas in artificially produced hydrocephalus in kittens are very similar to those encountered in congenital hydrocephalus in man. He says that production of hydrocephalus can be by either one of two ways; namely, by a mechanical or pathologic blocking of the aqueduct of Sylvius, damming the outflow of cerebrospinal fluid from the cerebral ventricles, or by a nervous influence of some kind accelerating the secretion of cerebrospinal fluid from the chorioid plexus, and may or may not be accompanied by the impairment of absorption of fluid through the arachnoid mater of the cerebral meninges into the dural sinuses. The subarachnoid method of production of hydrocephalus offers an opening for further investigation toward the determination of the nervous process or mechanism that leads to the impairment of the proper rate of absorption of the cerebrospinal fluid through the arachnoid and, thus, to the production of hydrocephalus. This nervous connection would seem most probably to be one of the etiologic factors in the production, congenitally, of hydrocephalus in man.

Neo-Arsphenamin in Amebic Dysentery.—In eleven cases of chronic amebic dysentery, Lantin administered neoarsphenamin intravenously, in varying dosage of from 0.30 to 0.60 gm. In all these cases, with the exception of one, the results obtained were very encouraging. The injections were followed by marked improvement of the symptoms. The cysts and the trophozoites disappeared from the feces in a short time. Administration by rectum (enema) gave good results in one case. The parasites were not seen fourteen hours after the administration of the solution by rectum (enema) and were not found in the successive feces examinations. In some way this by rectum (enema) method is preferable to the intravenous, because (1) it avoids the dangers and fatal accidents consequent on the intravenous route; (2) it is a very simple method that any person can administer to the patient without difficulty; (3) it may be one of the best ways of introducing the drug into the human body if the solution is properly retained.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

37: 401-448 (Oct.) 1925

Lupus Erythematosus. W. Dyson.—p. 401.
*Etiology of Lupus Erythematosus. A. M. H. Gray.—p. 406.
*Two Cases of Raynaud's Syndrome Presenting Unusual Features. P. B. Mumford.—p. 414.

Etiology of Lupus Erythematosus.—Gray insists that lupus erythematosus must be regarded as a definite clinical entity. It is a specific infective disease. The lesions are due to the local activity of a specific micro-organism. There is not sufficient evidence that this organism is the tubercle bacillus. Tuberculosis is a common accompaniment of the disease; the disease either predisposes to tuberculous infection or lights up preexisting tuberculous infection, or tuberculous subjects are specially liable to contract lupus erythematosus. Streptococcal infection is a fairly frequent terminal manifestation, especially of the acute types of the disease, and streptococcal infection may also complicate the less severe types.

Raynaud's Disease.—In one of Mumford's patients there were gangrenous patches on the hands, ears and feet and a catheter specimen of urine was found to contain a few pus cells, blood corpuscles and a streptococcus, which proved on culture to belong to the long chain group. The patient died after a series of fits of clonic type, commencing on the right side of the body and spreading to the left side later. Each fit (of which there were about a dozen) lasted two minutes, the patient being unconscious in the intervals. A postmortem examination was refused.

British Medical Journal, London

2: 679-726 (Oct. 17) 1925

Osteopathy, Chiropractic and Medicine. H. J. Waring.—p. 679.
Some Intestinal Disorders of Infancy. H. T. Ashby.—p. 683.
*Partial Intestinal Obstruction in Child Due to Postrectal Teratoma. A. E. Sawday.—p. 685.
Overlooked Cases of Foreign Body in Air and Food Passages. I. C. Jackson.—p. 686.
Id. II. T. McCrae.—p. 693.
*Id. III. M. Woodman.—p. 698.
Bronchoscopy for Disease. C. Jackson.—p. 699.
Acute Appendicitis in Octogenarian. W. T. Thomas.—p. 700.
Rectal Injection of Tartar Emetic for Bilharziasis. J. B. Anderson.—p. 700.
Torsion of Large Dermoid Ovarian Tumors. J. S. Robinson and J. H. Grove-White.—p. 700.

Intestinal Obstruction Due to Postrectal Teratoma.—In the case cited by Sawday the pelvis was completely filled by a hard retroperitoneal mass. Some fragments of the tumor were secured for microscopic examination. The section consisted of a mass of tissue which was made up of small papillary outgrowths of fibrous stroma, covered with epithelium of an elementary type, and contained numerous tiny hard nodules (cartilage). No hairs or teeth were found. However, there was no doubt that the tumor was a teratoma. The child, aged 4 years, died from uremia about three weeks after the operation.

Knife in Pleural Sac After Swallowing.—A woman admitted having swallowed a large poultry knife fourteen days previously. This was shown to be present on roentgen-ray examination and appeared to be in the midthoracic region of the esophagus. Under local anesthesia, a Jackson tube was inserted rapidly down the esophagus, which appeared to be empty. On retracting the route, a small slitlike opening was found in the posterior wall of the pharynx immediately above the entrance to the esophagus. The tube was then passed downward into the mediastinum and soon wandered in a maze of vessels in which localization was difficult or impossible, but no knife was found. An external incision had to be made, and a gush of air indicated that the pleural sac was open. Fingers were inserted through the slit, and the handle of the knife felt and removed. The patient subsequently died. The knife had entered the pleural sac near the apex, grazed the side of the lung, and its point had entered the diaphragm. The striking point in this case was that in a moment of insanity the patient had attempted suicide, and, failing, had made no mention of the fact to her friends, and she had actually walked about for fourteen days with the knife in situ.

Calcutta Medical Journal

20: 49-96 (Aug.) 1925

Filariasis. N. Banerji.—p. 49.
Superficial Pustular Folliculitis. G. Panja.—p. 64.
Tuberculous Cervical Glands. D. C. Chakraverti.—p. 68.
Case of Properitoneal Hernia. P. Chatterji.—p. 73.
Nodular Leprosy Resembling Frambesia; Case. M. Nath De.—p. 75.

Heart, London

7: 171-300 (Oct. 15) 1925

*Dynamics of Ventricular Systole. III. Aortic Stenosis; Aortic Insufficiency. L. N. Katz and H. S. Feil.—p. 171.
Schema of Circulation with Experiments to Determine Additional Load on Apparatus Produced by Conditions Representing Valvular Lesions. G. A. Allan.—p. 181.
Apparatus for Delivering Rhythmic Break Shocks; Also Interpolated Break Shocks Which Automatically Advance. A. N. Drury.—p. 205.
Conduction in Mammalian Heart. A. V. Condition. T. Lewis and A. M. Master.—p. 209.

Dynamics of Ventricular Systole.—The duration of the systolic phases of nine cases of aortic stenosis and thirteen cases of aortic insufficieny, which were determined from records obtained by optical methods of registration, were compared with normal values at corresponding heart rates, and the following conclusions are formed by Katz and Feil: In aortic stenosis the isometric contraction period is slightly lengthened. The ejection phase and total systole are definitely prolonged. The prolongation of ejection may be considered as a mechanism tending to compensate for the reduced rate of ejection. In aortic insufficiency the isometric contraction period is distinctly abbreviated, the result, they believe, of an increased contraction rate of the ventricle and of a reduced diastolic pressure in the aorta. The ejection phase is lengthened, and total systole is approximately normal in duration. The prolongation of ejection permits the heart to eject a greater quantity of blood.

Irish Journal of Medical Science, Dublin

401-446 (Sept.) 1925

Artificial Sunlight Treatment. B. Crichton.—p. 407.
Volvulus of Stomach. F. Gill.—p. 418.

Japan Medical World, Tokyo

9: 237-274 (Sept. 15) 1925

Epidemic of Encephalitis in Japan in 1924. R. Kaneko.—p. 237.
*Histologic Studies of Normal and Pathologic Human Parathyroid Glands. K. Kurokawa.—p. 241.

Funtion of Oxyphil Cells in Parathyroid Glands.—Kurokawa asserts that the oxyphil cells in the parathyroid glands are not merely a degenerative form but that they have important function. The oxyphil cells are larger than the chief cells and rich in stainable substances. The protoplasm and nuclei do not show any degenerative changes. Occasionally, fatty substances may be found in the cells, but they are not a sign of hypoplasia of the cells. The appearance or increase of the oxyphil cells does not accompany the increase of intercellular tissue, which may be regarded as an atrophic change. The oxyphil cells increase with age, but the increase is not a senile change. The oxyphil cells appear in masses and often form nodules, some of which may be seen with the naked eye. This is called nodular hyperplasia of oxyphil cells. The parathyroid gland has no physiologic atrophy; consequently, it is wrong to lay stress on its function only during the growing period. The oxyphil cells appear at the time when the clear chief cells begin to decrease, with increase of the dark chief cells, and they also increase during pregnancy. These facts indicate that they have an important function.

Journal of Biochemistry, Tokyo

5: 113-292 (July) 1925

Glucolytic Power of Blood. V. Adsorption Experiments with Sugar by Means of Animal Charcoal and Erythrocytes. Y. Kawashima.—p. 113.
Combining Forms and Quantitative Estimation of Argina in Protein Molecole. S. Sakaguchi.—p. 133.
Deargino-Protein. S. Sakaguchi.—p. 143.
Synthesis and Destruction of Phosphatids in Animal Bodies. K. Koizumi.—p. 171.
Content of Fatty-Like Substances in Cocks Fed Vitamin B Free Diet. E. Kodama.—p. 185.
New Methods for Determination of Cystein. Y. Okuda.—p. 201.
New Methods for Determination of Cystin in Proteins (Iodin Method). Y. Okuda.—p. 217.
Comparative Biochemistry. I. Occurrence of Arginase in Various Animal Organisms. Y. Sendju.—p. 229.
*Renal Function During Pregnancy. K. Yamada.
Partial Bromidization of Phylorhizin. III. K. Misaki.—p. 287.

Renal Function During Pregnancy.—Yamada points out that the secretory abnormalities of the kidney in a pregnant animal seem to be a partial phenomenon of tissue intoxication at large, caused by an increase of ammonia due to the production of abnormal acids, and that they are not a direct lesion of the kidney itself.

Journal of Tropical Medicine and Hygiene, London

28: 361-376 (Oct. 15) 1925

Identity of Gongylonema Subtile Alessandrini. H. A. Baylis.—p. 361.
Identity of Heterakis Neoplastica, Wassink. H. A. Baylis.—p. 362.
Radulae of Fresh Water Mollusca. F. G. Cawston.—p. 365.

Lancet, London

2: 847-898 (Oct. 24) 1925

Developments of Harvey's Doctrine, "Omne Vivum Ex Ovo." F. Mott.—p. 847.
Third Circulation and Its Channels. I. H. Cushing.—p. 851.
Anatomically Irregular Sphenoidal Sinusitis with Optic Neuritis Localized by Suction Syringe. P. Watson-Williams.—p. 858.
*Relation of Nephritis in Egypt to Intestinal Infection. H. B. Day.—p. 860.
*Respiratory Catarrh in Children. R. C. Clarke.—p. 864.

Relation of Nephritis to Intestinal Infection.—Investigations made by Day show that the onset of acute or subacute nephritis in Egypt is commonly preceded by intestinal infection. Bacteriologic examination of the urine in such cases shows the presence of bacilli of intestinal types. These bacilli are capable of reproducing nephritis in laboratory animals. Cure of an intestinal lesion was found to benefit a consecutive nephritis. Vaccine treatment was frequently successful in these cases of infective nephritis. The dose should be inversely proportional to the severity of the renal symptoms. The oral administration of vaccine was found efficacious. Intestinal antiseptics proved of very limited value. For patients with obvious intestinal lesions a direct therapy was indicated. Some forms of chronic dysentery of amebic or bilharzic origin responded to emetin injections and showed a distinct improvement in the renal condition as soon as the intestinal infection was controlled. Similarly, patients with nephritis complicating ankylostomiasis benefited by specific treatment. For acute cases of nephritis and pyelitis when bacilli were plentiful in the urine, the free administration of alkalis appeared beneficial, as in bacilluria. Urinary antiseptics were of little avail, and the impaired excretory power of the kidneys prevented the usual degree of concentration in the urine.

Respiratory Catarrh in Children.—Making routine examinations of infants from 3 to 6 weeks old, Clarke noted that at least half of them had respiratory catarrh. He thinks that the development of respiratory catarrh probably depends on two main factors: (1) the number and virulence of the catarrhal organisms which attack the mucous membrane; (2) the local resistance of the mucous membrane and the general immunity of the body. It has been shown that the mucous membrane secretes a definite bacteriolytic agent. What would appear from clinical observations is: (1) that the very young mucous membrane is deficient in resistance; (2) that the mucous membrane, which has been the object of early and repeated attacks, either loses or never acquires an adequate resistance. The mother and germ laden atmosphere are the sources of infection. To prevent infection, if the mother has acute catarrh when the baby is born, she should be instructed to wear a folded handkerchief over the mouth and nose while "doing" or feeding the baby. This precaution should be extended to the maternity nurse and children's nurse. All persons coming to view the infant should be inspected for colds and shut out if a cold is admitted and should always be requested neither to breathe on nor kiss the baby. To avoid the other main method of infection, the germ laden atmosphere, is an easy matter in an uncrowded house. The infant should either be kept out of doors or in a draft. It is difficult to overcome prejudice in this matter, especially during the daily bath, but it is certain that no infant can come to any harm if efficiently bathed in front of a fire with all the windows open. For the rest, children should be kept away from people with colds and children's parties should be cut down to a minimum. Clarke lays great emphasis on this last point.

Medical Journal of Australia, Sydney

2: 417-442 (Oct. 3) 1925

Practice of Medicine in Middle Ages. W. E. Blackall.—p. 417.
Plexiform Neuroma: Case. G. Bell and K. Inglis.—p. 423.
Congenital Tumor (Plexiform Neuroma) of Left Upper Limb. G. Bell and K. Inglis.—p. 427.
Chronic Tuberculous Osteomyelitis of Femur in an Adult. B. T. Edye.—p. 428.

Medical Journal of South Africa, Johannesburg

21: 31-58 (Sept.) 1925

Vulvovaginitis in Children. A. R. Fraser.—p. 31.
Renal Sarcoma in Infant. C. F. Beyers.—p. 38.
Results of One Hundred and Fifty-Three Consecutive Cases of Suprapubic Prostatectomy. H. T. Mursell.—p. 40.
Bilharziasis of Female Genital Tract. R. W. B. Gibson.—p. 44.
Bench, Bar and Medicine. J. C. Dove-Wilson.—p. 45.

Practitioner, London

115: 223-300 (Oct.) 1925

Early Diagnosis of Disease of Spinal Cord. F. Mott.—p. 233.
Etiologic Aspect of Nervous and Mental Disorder. J. G. P. Phillips.—p. 248.
Results of Operative Treatment of Malignant Disease of Breast. H. P. W. White.—p. 255.
Rural Midwifery Practice. E. K. Mackenzie.—p. 264.
Action of Waters and Baths in Arthritis. V. Coates.—p. 274.
Blood Pressure in Diseases of Skin. W. K. Sibley.—p. 282.
Ionization Treating Chronic Inflammation of Nasal Sinuses Without Operation. A. G. Dampier-Bennett.—p. 285.

Annales des Maladies Vénériennes, Paris

20: 721-800 (Oct.) 1925

Visceral Syphilis. J. Golay and A. Starobinsky.—p. 721.
*Congenital Dislocation of the Hip Joint. S. Cassavetis.—p. 739.
*Case of Lupiform Syphilid. E. Pisani.—p. 756.
Sudden and Tardy Rousing of Latent Chronic Gonorrhea. Belgodère.—p. 761.
Urethritis Caused by Pasteurella. Synghellakis.—p. 772.

Pathogenesis of Congenital Dislocation of the Hip Joint.—Cassavetis analyzes the five theories of congenital dislocation of the hip joint, namely, trauma; vicious position and compression of the fetus; inflammatory process; muscle imbalance, and malformation. He believes that congenital syphilis may cause the arrest of development of the hipbone and consecutive dislocation. He describes in detail five out of a total of twenty cases in which congenital syphilis seemed to be the predominant factor. Hence specific treatment for syphilis and endocrine organotherapy may sometimes advantageously supplement surgical intervention in these congenital luxations.

Syphilitic Eruption Resembling Lupus.—Pisani observed this case in an adolescent. The aspect of the scars, the seven years' duration of the process, and the easy bleeding of the ulcerations, simulated lupus. But a positive Wassermann test in the patient and his mother suggested rather a lupiform rupioid syphilid in a subject with tardy congenital syphilis. This diagnosis was confirmed by specific therapy, as the eruption became favorably modified, tending to cicatrization, under the first injections of bismuth.

Archives de Médecine des Enfants, Paris

28: 601-664 (Oct.) 1925

Amebic Dysentery in Very Young Children. M. Petzetakis.—p. 601.
Helminthiasis in Warsaw Children. Cieszynski and Gileczek-Hac.—p. 623.
*Prenatal Treatment of Syphilis. J. Dayras.—p. 631.
*Meningeal Hemorrhage in the New-Born. J. Comby.—p. 638.

Prophylaxis of Congenital Syphilis.—Dayras reiterates that to prevent syphilis in the offspring, intensive specific treatment is important not before, but immediately after impregnation, if the husband has had syphilis and the wife has shown no signs of syphilis before. Since the transmission of syphilis to the child is not hereditary but congenital, the treatment should be instituted in such cases immediately with any delay in the menses. After conception, the treatment must be continued to the very last day of the pregnancy.

Lumbar Puncture in Cerebral Hemorrhage of the New-Born.—Comby believes that a lumbar puncture, soon after birth, is indicated in every new-born infant who has been exposed to injury to the cranial bones, or to any congenital infection or toxic action inducing fragility of the vessels. In cases with uncertain symptoms, the puncture may not only confirm the fact of a meningeal hemorrhage, but also contribute to the recovery. He cites thirteen cases of this kind, with recovery in 50 per cent. under repeated lumbar puncture, followed by intraspinal injection of horse serum and subcutaneous injection of some bland hemostatic solution.

Bruxelles Médical, Brussels

5: 1470-1496 (Oct. 11) 1925

Polyvalent Serum Against Gangrene. H. Vincent.—p. 1470.
The Medical Expert. L. Delattre.—p. 1479.
*Crystals in Cerebrospinal Fluid. Bech.—p. 1484.

Crystals in the Cerebrospinal Fluid During Meningitis.—Repeated examination of the cerebrospinal fluid from a girl, aged 4, with meningitis, revealed the presence of numerous flat crystals, responding to tests for cholesterol. So far as Bech's knowledge extends, this is the first case to be published in which such crystals were present in the cerebrospinal fluid.

Bulletin de l'Académie de Médecine, Paris

94: 901-916 (Oct. 20) 1925

*Oxygen for Subcutaneous Injection. Agasse-Lafont and Douris.—p. 904.
Smallpox in a Southern Province of France. L. Camus.—p. 906.
Functional Restoration After Total Colectomy. Duval.—p. 910.
The Tubes in Disease of Uterus and Adnexa. C. Daniel.—p. 912.

Improvised Supply of Oxygen for Subcutaneous Injection.—With Agasse-Lafont and Douris' technic every practitioner will be able to generate oxygen enough for an injection. The oxygen is collected in a 50 c.c. jar as released by the action of potassium bichromate on hydrogen dioxid. The supply is ample for the purpose,

Bulletin Médical, Paris

39: 1109-1128 (Oct. 17) 1925

Incidents and Accidents of Vaccination Against Smallpox. P. Blum and L. Bouttier.—p. 1115.
*Zinc Chlorid in Treatment of Metrorrhagia. L. M. Pierra.—p. 1117.

Zinc Chlorid Solution in Hemorrhagic Metritis.—Pierra obtained favorable results with the Delbet method in twenty cases of hemorrhagic metritis. He used 1 c.c. of a 10 or 20 per cent. solution of zinc chlorid, for intra-uterine instillation, introducing the tip of the syringe to the fundus of the uterus. The first three injections were made at eight or ten days' intervals; the next at five or six days'. A total of six or eight instillations were given. Only in two patients the instillations were interrupted on account of severe pain from the solution. The treatment appeared to be effectual in all varieties of hemorrhagic metritis, except those from incomplete abortion, or associated with lesions of the adnexa.

Bulletins de la Société Médicale des Hôpitaux, Paris

49: *1327-1338 (Oct. 23) 1925*

*Hemophilia Versus Hemogenia. J. Comby.—p. 1327.
*Calcification of Pineal Gland. A. Léri and F. Layani.—p. 1329.
The Benzyl Ester of Cinnamic Acid in Treatment of Tuberculous Glands. J. Jacobson.—p. 1329.

Two New Cases of Hemogenia.—Comby adds two cases of hemogenia to that recently reported by Emil-Weil and Isch-Wall. An infant developed extensive ecchymoses and a hematoma as she bumped herself in learning to walk. An excessive tendency to ecchymoses was manifest also in the mother. Both mother and child seemed healthy otherwise. In another woman, aged about 50, extensive ecchymoses appeared after the slightest injury to the skin. This was associated with abnormally profuse menses and hemoptysis recurring for twenty years. The lungs proved to be normal. These cases which, Comby says, were previously considered as an attenuated form of hemophilia, may belong in the hemogenia group.

Roentgenogram in Diagnosis of Pineal Tumor.—Léri and Layani refer to Alajouanine, Lagrange and Baruk's case in which the diagnosis of a tumor of the pineal gland was based on a roentgenogram showing a dark spot in the corresponding area. They state now that a similar shadow was found in the roentgenograms from twenty-seven of 103 subjects without any sign of a pineal lesion.

Comptes Rendus de la Société de Biologie, Paris

93: 889-976 (Oct. 23) 1925. Partial Index

*Cholesteremia of Pregnant Tuberculous Women. M. Salomon and De Potter.—p. 891.
*Cholesteremia and Arterial Pressure in the Tuberculous. M. Salomon and De Potter.—p. 894.
Advantages of Dark Field for Microscopic Study of Preparations After Fixation and Staining. Jeantet.—p. 895.
Pulverized Tapioca in Culture Mediums. Berthelot and Ramon.—p. 896.
*Immunization Against Tetanus. G. Ramon and P. Descombey.—p. 898.
*The Blood in Typhus. N. Kossovitch.—p. 900.
Tuberculosis and Vitamin C Deficiency. G. Mouriquand et al.—p. 901.
*Restoration of Sight After Resection of Optic Nerve. Matthey.—p. 904.
The p_H of Sea Water. G. Bohn and A. Drzewina.—p. 917.
Rôle of Skin in Hog Cholera in Guinea-Pigs. A. de Jeney.—p. 921.
Method for Recording Heart Sounds and Pulsations. Barry.—p. 923.
*The Coagulability of the Blood. H. Roger and L. Binet.—p. 925.
*Case of Induced Pott's Disease. P. Chevallier.—p. 927.
*Nerve Regulation of Epinephrin Secretion. Tournade et al.—p. 933.
*Arterial Pressure and Epinephrin Secretion. A. Tournade and M. Chabrol.—p. 934.
*Thyroid and Quinin. Kroszczynski and Modrakowski.—p. 939.
*Skin Test for Meningococcus. M. Erlich et al.—p. 943.
*Etiology of Scarlet Fever. H. Brokman et al.—p. 944.
*Pathogenesis of Scarlet Fever. H. Brokman et al.—p. 946.
Action of Insulin and Muscle Tissue on Formation of Glucose. C. Lundsgaard and S. A. Holbøll.—p. 957.
Autoreinfection with Hookworm. J. Bacigalupo.—p. 966.
*Pituitary Gland and Glycemia in Toads. B. A. Houssay et al.—p. 967.
Action of Insulin on Toads. B. A. Houssay et al.—p. 968.
Polyuria from Removal of Pituitary in Toads. Houssay et al.—p. 969.
Glucose of Plasma and Blood Corpuscles in Animals. O. Pico-Estrada and V. Morera.—p. 971.

Cholesteremia of Tuberculous Women During Gestation.—The cholesterol content of the blood increases in normal pregnancy, while in progressing tuberculosis it falls below normal. These conflicting tendencies were evident in Salomon and De Potter's research on fifty-eight tuberculous pregnant women. The cholesteremia was low in the progressing cases and was high with a nonactive process. In the postpartum period, hypercholesteremia was manifest in ten of twelve with nonactive tuberculosis, while hypocholesteremia was marked in eight of ten with an active process. This fact may indicate exacerbation of the tuberculous infection, and therefore throw light on the prognosis.

Cholesteremia and Arterial Pressure in the Tuberculous.—The same authors assert further that no connection seemed to exist between the content of cholesterol in the blood and the arterial pressure.

Immunization Against Tetanus by Anatoxin with Pulverized Tapioca.—Ramon and Descombey injected horses with gradually increasing doses, from 10 to 100 c.c., of tetanus anatoxin mixed with pulverized tapioca. After the last injection, 1 c.c. of the horse's serum neutralized from 10,000 to 50,000 guinea-pig lethal doses of toxin, while 1 c.c. of serum from horses injected with the same doses of anatoxin without tapioca neutralized only from 300 to 1,000 lethal doses. The serum from horses, hyperimmunized with 125 to 350 c.c. of toxin and tapioca mixture, contained from 10,000 to 25,000 units of antitoxin per cubic centimeter after three months, while in the controls only 1,000 or 1,500 units were found after four or five months. The subcutaneous mode of injection appeared to be most effectual.

The Blood in Typhus.—Kossovitch found in the blood of 138 patients with typhus a shifting to the left, by Arneth's formula, particularly marked in grave cases.

Recuperation of Sight After Resection of Optic Nerve in Tritons.—Matthey severed intracranially the optic nerves in two tritons. Both recovered vision thereafter. There was microscopic evidence of regeneration of these nerves, with extension into the corresponding cerebral hemisphere.

Action of Lung on Coagulability of Blood.—Roger and Binet conclude from their research on dogs that the coagulability of blood becomes reduced during its passage through the lung.

Experimental Pott's Disease in Rabbit.—Chevallier inoculated the eye of a rabbit with material from an erythema nodule of the Hutchinson type. A nodule formed in the iris and cornea and paraplegia developed by the fortieth day. Three days later the rabbit was killed. Two abscesses in the third and fourth lumbar vertebrae had caused the compression of the spinal cord. Histologic examination showed tuberculous osteitis. A large number of tubercle bacilli, associated with cocci, were present in the cheesy pus. The organs and glands appeared normal. Chevallier believes it is the first case on record of induced Pott's disease.

The Nerves Controlling Epinephrin Secretion.—Tournade and his co-workers' study on dogs in parabiosis apparently proved that the nerve fibers regulating the epinephrin secretion pass from the medulla oblongata and pons to the spinal cord. Thence, by the way of the anterior roots, from the fourth thoracic to the first lumbar, they join the splanchnic nerves, thus reaching finally the chromaffine elements of the suprarenals.

Effect of Arterial Pressure on Epinephrin Secretion.—Tournade and Chabrol relate that arterial hypotension seems to enhance vasoconstriction and the secretion of epinephrin in dogs, while hypertension inhibits them.

Antagonistic Action of Thyroid Extract and Quinin.—Kroszczynski and Modrakowski say that their findings in tadpoles confirmed the opposite action of thyroxin and quinin. This supplies an experimental basis for the benefit from quinin in exophthalmic goiter.

An Intradermal Meningococcus Test.—Erlich and his co-workers injected intradermally eighty-two subjects, aged from 1 to 20 years, with the toxin from cultures of meningococci A or B. The reaction was positive in forty-five, negative in twenty-eight and uncertain in nine. Administration of a nonspecific serum did not influence the positive response. The principle is the same as in the Schick, Brokman and Dick reactions.

Etiology of Scarlet Fever.—The serum from rabbits immunized with Caronia's antiscarlet fever vaccine seemed to agglutinate scarlet fever streptococci at 1:640, and even 1:2,560. The same was noted with organs of guinea-pigs in the Tarozzi-Noguchi medium. No agglutination of scarlet fever streptococci occurred with serum from rabbits vaccinated with the same medium, without organs. Brokman and his co-workers inoculated fourteen subjects with a positive Dick test with Caronia's vaccine, and four with the organ medium. The test became negative in all. Thus the induced antibodies are not specific, but heterogenous. They are produced by the antigen from the organs in this medium.

Pathogenesis of Scarlet Fever. — Brokman and his co-workers say that the Dick test applied in 600 subjects confirmed the individual sensitiveness to the toxin of the scarlet fever streptococcus. The sensitiveness varies with the age of the subject. The specific antitoxin was present in ten of eleven scarlet fever convalescents. Only those with a positive Dick test contracted the disease (six). In two scarlet fever patients the eruption skipped the area of a positive Dick test, previously made. From 425 to 800 skin units of toxin induced immunity in thirty-three out of forty-one inoculated. Twenty-four of thirty-four subjects were immunized with Ramon's antitoxin. The Dick and the Villa tests made simultaneously in fifty subjects, elicited a positive reaction to both only in three. With the Italian vaccine (three injections of 2 c.c.), a positive Dick test became negative in eight of fourteen cases. Four children were immunized with the Tarozzi-Noguchi culture medium used by the Italians. The positive Dick reaction became negative in two. This may suggest some biologic relationship between the scarlet fever hemolytic streptococcus and the Di Cristina germ.

Influence of Pituitary Gland on Glycemia in Toads.—Houssay, Mazzocco and Rietti found hypoglycemia and reduction of the liver glycogen in toads after removal of the whole pituitary gland or one lobe, as well as after injury to the infundibulum. The muscle glycogen did not seem to decrease in these animals.

Lyon Chirurgical

22: 597-756 (Oct.) 1925

Operation for Abscess in the Liver. O. Cignozzi.—p. 597.
*Multiple Gastric Ulcers. X. Delore et al.—p. 620.
*Invagination After Gastro-Enterostomy. J. G. Kopp.—p. 664.
Complicated Fracture of Lumbar Vertebra. J. Creyssel.—p. 678.

Multiple and Recurring Forms of Ulcer of the Stomach.—Delore, Mallet-Guy and Vachey distinguish three types of the *maladie ulcéreuse;* first, a type in which two or more ulcers appear successively or simultaneously in a patient not treated previously by operation. This is the "spontaneous double ulcer." The second type is characterized by an ulcer appearing in another region of the stomach, when the first ulcer had healed after an operation. This is the "bascule ulcer." Recurrence of the ulcer at the site of the first ulcer, may occur in rare cases. This is the true "recurring ulcer." The clinical diagnosis of a spontaneous double ulcer can hardly be made, except when it is revealed by the roentgen ray. If the two ulcers are close together, extensive resection is indicated. Coexistence of an ulcer in the pylorus with another in the body of the stomach, with absence of stenosis, suggests gastropylorectomy, or in certain cases excision of the ulcer with gastro-enterostomy. A supplementary pylorectomy may be needed if the pyloric ulcer proves rebellious. In stenosis of the pylorus with an ulcer in the lesser curvature, gastro-enterostomy is the treatment of choice. With stenosis both of the pylorus and from hour-glass contraction of the body of the stomach, gastropylorectomy is advisable. This is the most complete indication for an extensive operation.

Retrograde Invagination After Gastro-Enterostomy.—Kopp describes a case of invagination following gastro-enterostomy in a woman, aged 35. Six of the seventeen cases reported to date had a fatal outcome, because the diagnosis was made late or not at all. Pains and bloody vomiting after gastro-enterostomy should suggest possible retrograde invagination of the jejunum. Kopp assumes that this complication occurs more frequently than is clinically noted, owing to spontaneous reduction of the invagination in most cases.

Paris Médical

57: 345-360 (Oct. 31) 1925

Subcutaneous Calcium Calculi. A. Gilbert and L. Pollet.—p. 345.
*Edema of Liver Origin. M. Villaret et al.—p. 353.
*Etiology of Typhus. P. Hauduroy.—p. 356.

Edema of Liver Origin.—Villaret, Bénard and Biancani reiterate that the prognosis of a more or less generalized edema with liver disease is usually grave. The patients present signs of liver insufficiency and most of them soon die, presenting severe jaundice. Roger's experiments proved that the autolysis products from a diseased liver inhibit the excretion of water by the kidneys, and disturb the acid-base and salt balance. These factors tend to increase the absorbing property of the humors and tissues for water, the so-called hydrophilia of the colloids.

Recent Research on Typhus.—*Hauduroy discusses the* puzzling relations between *Rickettsia prowazeki* and *Proteus X* in connection with typhus. Fejgin has recently reported that guinea-pigs developed the same disease when inoculated with an antiproteus bacteriophage or with typhus virus from typhus patients. Each of these conferred immunity against the other in nearly every instance. He queries whether this rickettsia and the proteus may not be different forms of the same filtrable virus.

Presse Médicale, Paris

33: 1409-1424 (Oct. 24) 1925

*Eosinophil Count in Infections. C. Aubertin and R. Musso.—p. 1409.
*Care of Patient in Stomach Operations. X. Delore et al.—p. 1410.

Do Eosinophils Disappear During Infection?—Aubertin and Musso state that in acute or chronic infections, with neutrophil leukocytosis, the number of eosinophils in the blood is generally unchanged. A notable decrease of eosinophils in certain cases does not always indicate a grave prognosis.

Preoperative and Postoperative Care in Gastric Surgery.—In addition to the usual preparation of the patient, Delore and his co-workers extol the advantages of lavage of the stomach with a hot liquid the day before the operation, or immediately preceding it in emergency cases. They reiterate the necessity for rigorous disinfection of the mouth and teeth, beginning several days before the operation. Repeated injections of physiologic saline or glucose solution may be required in certain cases to combat dehydration. No roentgen-ray examination should be made on the eve of an operation, if not urgent. In the postoperative period, lavage of the stomach may give excellent results in mild gastric hemorrhages and in the vicious circle. With complicating peritonitis, lavage is a useful symptomatic treatment, often inducing marked temporary improvement. Prompt and repeated rinsing out of the stomach may exert a surprising effect in acute post-surgical dilatation of this organ.

Policlinico, Rome

32: 1453-1484 (Oct. 19) 1925

Specific Treatment of Malaria. V. Ascoli.—p. 1453.
Lisfranc Amputation with Mobilized Stump. S. Bile.—p. 1461.
Sympathectomy in Angina Pectoris. G. Pieri.—p. 1462.

Siglo Médico, Madrid

76: 221-244 (Sept. 5) 1925

*Sugar in Local Treatment of Cancer. Vital Aza.—p. 221.
Sodium Citrate in Treatment of Anemia. M. Gómez Fresno.—p. 223.
A Belgian Pioneer in Ophthalmology: F. D'Aguilon. Diaz Caneja.—p. 227.

Sugar in Local Palliative Treatment of Uterine Cancer.—Vital Aza states that the fetid discharge from an inoperable cancer or after radiotherapy can be checked by packing the vagina with cotton impregnated with a mixture of equal parts of saccharose, distilled water and glycerin. In eighteen or twenty days the discharge is no longer fetid and the irritated tissues of the environment heal. He has been applying this treatment for two years, as recommended by Calatayud, and Nogier, Foveau de Courmelles and others have called attention to the value of sugar as it sets up an exosmotic current which washes out the cell detritus. He uses about 30 gm. of the mixture each time, packing the long twist of absorbent cotton entirely into the vagina. The patient can withdraw it in seventeen or eighteen hours. Six or seven of these tamponings improve conditions remarkably, and by the eighteenth day there is scarcely any odor as the cotton is removed.

Archiv für Kinderheilkunde, Stuttgart

76: 241-320 (Oct. 17) 1925

Psychology of Puberty. E. Spranger.—p. 241.
Tuberculin in Whooping Cough. C. Stuhl.—p. 253.
Physical Development in Puberty. H. Aron.—p. 258.
Metabolism in Infants. E. Müller and H. Steudel.—p. 272.
Congenital Lymphangiectatic Edema. A. Hofmann.—p. 285.
*Foreign Body in the Bronchus. D. Klepetář.—p. 287.
Significance of Vitamins in Infant Feeding. P. Reyher.—p. 291.

Foreign Body in the Bronchus.—Klepetář's patient, a child 2½ years of age, aspirated part of a peanut. He had after that symptoms resembling whooping cough. He expectorated the foreign body after being held with the head down.

Beiträge zur klinischen Chirurgie, Berlin

134: 321-482, 1925

Surgery of Vegetative Nervous System. Hahn.—p. 321.
Surgical Treatment of Paralyses. K. Seiffert, Jr.—p. 336.
Goiter in Silesia. H. Herfarth.—p. 364.
*Goiter in Animal Experiments. B. Breitner.—p. 380.
Pneumococcus Peritonitis. Hagedorn.—p. 391.
Treatment of Cholangeitis. Tietze.—p. 396.
Stomach Resection for Exclusion. K. Gütig.—p. 399.
*Bleeding Time in Ulcer and Cancer. H. Harttung.—p. 403.
Cystadenoma of Pancreas. H. Simon.—p. 410.
Chronic Appendicitis. C. Goebel.—p. 413.
*Vaginal Plastics. G. Schubert.—p. 421.
Blastomycetes and Pneumococcus Parotitis. Pendl and Materna.—p. 426.
Fractures of the Spine. H. Nossen.—p. 435.
Sweat Gland Adenomas in Scars. F. Neugebauer.—p. 437.
Ossification of Masseter. C. Partsch.—p. 449.
Subungual Exostoses. E. G. Niecke.—p. 452.
Measuring Climatic Radiation. J. Tichy.—p. 455.
Autovaccines. E. Breitkopf.—p. 458.
Neoplasms and Pyogenic Infection. E. Melchior.—p. 460.
Branchial Fistulas. J. Becker.—p. 470.
Diverticulum of Esophagus. H. Harttung.—p. 473.
Cancer Resembling Lupus. C. Barthels.—p. 480.

Goiter in Animal Experiments.—Breitner considers Blauel and Reich's experiments as an important starting point. They found an accumulation of colloid in the thyroids of rats with stenosis of the trachea. He found that this accumulation did not occur when he removed simultaneously half of the thyroid or when he fed the animal with iodin. On the other hand, when a dog is fed with thyroid or iodin after resection of half of his thyroid (without tracheal stenosis) the loss of colloid from the remaining half—which would otherwise occur—is prevented. It is impossible to make a functional diagnosis from the histology of the goiter: The secretion may be qualitatively inferior (especially in goiter of adolescents). It seems that the iodin gives it its full value.

Bleeding Time in Ulcer and Cancer.—Harttung found that the bleeding time was normal with cancer of the stomach and prolonged with ulcers. Autohemotherapy shortened it.

Construction of Artificial Vagina from the Rectum.—Schubert formed a vagina from the rectum in seventeen women (one death). In three of them the uterus was functioning. He mentions a case operated on by his method by Wagner, with two subsequent normal deliveries.

Deutsches Archiv für klinische Medizin, Leipzig

148: 273-380 (Oct.) 1925

*Gastric Secretion. L. Heilmeyer.—p. 273.
The Pneumonia Relapse. K. Voit.—p. 313.
*Poisoning of Stomach with Acids. K. Sick.—p. 318.
Acute Myeloblastic Leukemia. Kwasniewski.—p. 344.
*Serum Cholesterol in Pernicious Anemia. H. Köhn.—p. 357.
Some Unusual Electrocardiograms. H. von Hoesslin.—p. 372.

Gastric Secretion.—Heilmeyer added 3 c.c. of a 0.5 per cent. solution of indigocarmin to 350 c.c. of water and 18 c.c. of 96 per cent. alcohol. He introduced the mixture into the stomach after evacuation of the contents, and made a fractional analysis thereafter of the acidity, chlorids and color. The acidity of the pure secretion was determined by a simple equation. It ranged from 0.2-0.4 per cent. in healthy subjects, to over 0.5 per cent. in hyperchlorhydria. The concentration of chlorids was comparatively constant. The method is of value for differentiation between true hyperchlorhydria and hypersecretion—the latter being especially frequent with ulcers, the former in neurotic subjects. He found also that iodin is excreted by the stomach after intravenous injections.

Poisoning of Stomach with Acids.—Sick reports on his histologic and experimental investigations of the gastric sequels of poisoning with mineral acids.

Serum Cholesterol in Pernicious Anemia.—Köhn found in secondary as well as pernicious anemia practically always low values of cholesterol in the serum. This was especially pronounced in the progressive stages of pernicious anemia. Its concentration was in inverse proportion to the gravity of the latter process.

Deutsche medizinische Wochenschrift, Berlin

51: 1725-1766 (Oct. 16) 1925

The Brain in Paralysis Agitans. K. Kleist.—p. 1725. C'cn, p. 1813.
*Birth Injury of Petrous Bone. J. Berberich.—p. 1726.
*Treatment of Dysentery. G. P. Alivisatos.—p. 1728.
*Postencephalitic Character Changes. E. Weidner.—p. 1731.
Art of Prescribing. K. Schübel.—p. 1734. C'cn.
Homeopathy. O. Leeser.—p. 1735.
Autonomic Nerves. E. Schilf.—p. 1737.
*Transmission of Therapeutic Malaria by Anopheles. R. v. Engel.—p. 1738.
Rubber Tube for Aspiration. J. Clemens.—p. 1739.
The Mátéfy Reaction in Pulmonary Tuberculosis. Salzmann.—p. 1740.
Juvenile Neurosyphilis. M. Gumpert.—p. 1741.
Night Sweats in Tuberculosis. Zwerg.—p. 1742.
The Knee-Jerk. P. Prengowski.—p. 1743.
Roentgen Treatment in Gynecology. F. Heimann.—p. 1744. C'cn.
Typhoid in Germany. B. Möllers.—p. 1745.
Venereal Diseases in German Marine. R. Rosner.—p. 1747.
Danger of Suicide as Indication for Abortion. Niedermeyer.—p. 1747.
History of Pathogenic Germs. E. Ebstein.—p. 1748.

Birth Injury of Petrous Bone.—Berberich applied in newborn animals a suction apparatus on the head, and produced typical cephalohematomas as well as intracranial hemorrhages. The changes in the brain corresponded in every respect to those found by Schwartz in 65 per cent. of new-born babies. Those in the petrous bone were identical with Voss' findings in the human bone. This is another confirmation of the grave injury of brain and skull which occurs almost regularly during delivery.

Treatment of Dysentery.—Alivisatos administers by mouth 20-30 drops of a polyvalent vaccine on the first day, 50 drops on the second, and 60-70 drops on the third day—all fractioned in two or more doses. He observed a rapid improvement in 111 out of 117 cases. Only one patient with the Shiga type—the treatment not started till the eleventh day—died twelve hours after the first dose.

Postencephalitic Character Changes.—Weidner describes the changes of behavior after encephalitis. They occur practically only in children, but are so typical that a retrospective diagnosis may be made in cases in which the encephalitis had not been noted. The children try to mix into everything, fight, tell tales on their comrades, run about, and are inclined to sexual delinquencies. The intelligence is apparently intact, but the motor restlessness is a most prominent feature. He recommends phenobarbital—from 0.05 gm. to 0.2 gm. daily—best in the afternoon and evening. Scopolamin (0.5 to 2 teaspoonfuls of a 0.01 per cent. solution) should be given in the morning. The prognosis is bad.

Transmission of Therapeutic Malaria by Anopheles.—Engel was able to transmit malaria from the ninth human passage by anopheles. The blood of the patient had contained gametes.

Deutsche Zeitschrift für Chirurgie, Leipzig

193: 145-432 (Oct.) 1925

*Treatment of Fractures of Neck of Femur. Portwich.—p. 145.
*Sensory Innervation and Bone. E. Sulger.—p. 186.
Nervous System and Regeneration of Bones. W. Felix.—p. 196.
Artificial Esophagus. J. Sebestyén.—p. 238.
*The Exophthalmic Goiter Question. E. Liek.—p. 246.
Thyroid and Other Glands in Exophthalmic Goiter. Holzweissig.—p. 276.
Transpleural Bronchostomy. S. Minkin.—p. 286.
*Peritonitis and Ileus. L. Schönbauer.—p. 295.
Incarceration of Hernia. C. Ritter.—p. 308.
Gallstones and Gastric Secretion. J. Loessl.—p. 325.
*Action of Cathode Rays on Germs. C. von Angerer et al.—p. 330.
Modification of the Meyer-Schlüter Apparatus for Localization of Brain Tumors. W. E. Pauli and E. von Redwitz.—p. 343.
Autohemotherapy of Postoperative Lung Disease. C. Rausche.—p. 349.
Bone Changes with Neurofibromatosis. O. Fliegel.—p. 359.
Epithelization and Transplantation of Veins. K. Reschke.—p. 366.
Circulation After Sympathectomy. J. Sebestyén.—p. 375.
Treatment of Corrosion of Esophagus. J. Alksnis.—p. 378.
Volvulus of Sigmoid Flexure. J. Alksnis and P. Muzeneek.—p. 390.
Lateral Fistulas in the Neck. S. Müller.—p. 401.
Enteroliths. O. Winterstein.—p. 409.
Splenectomy for Torsion of Malarial Spleen. N. N. Nasaroff.—p. 420.
Extirpation of Cancerous Bladder. T. Messtorff.—p. 425.

Conservative Treatment of Fractures of Neck of Femur.—Portwich had only one failure in ten patients with medial fracture of the femoral neck, treated by Whitman's method.

Sensory Innervation and Bones.—Sulger denervated one side of the mandible in dogs. No change of weight or of the structure of the bone occurred within half a year.

Exophthalmic Goiter Question.—Liek emphasizes the significance of the brain in the pathogenesis of exophthalmic goiter. He has scarcely ever encountered a case without a history of some grave psychic trauma. Psychanalysis may help in treatment, in the beginning as well as before and after surgical treatment. He prefers the latter to roentgen therapy except in adolescents. The operation should be made in a favorable phase of the disease. The mental condition of the patient is prognostically more important than the basal metabolism. The intervention should be extensive, but without attempt to get the thymus. He deplores the frequent overlooking of the psychic condition by self-styled "sober thinking" surgeons and attributes it to the loss of mental versatility occurring in every mechanization of mental work. This leads to a sort of self-righteous mandarin attitude, and wrong judgment as to success and failure.

Peritonitis and Ileus.—Schönbauer had in the last three and a quarter years (Eiselsberg's clinic) a mortality of only 11.2 per cent. in eighty-nine cases of perforation peritonitis, against 34.7 per cent. among 164 cases treated previously. He attributes the success to the irrigation of the peritoneum with 1.5 to 3 liters of a solution of pepsin in a 0.3 per cent. solution of hydrochloric acid. The method was however a failure in postoperative peritonitis. This led to an investigation of the mechanism in the latter. Lycopodium contained in enemas was found in the stomach after laparotomies. This indicated that antiperistalsis is a frequent occurrence after laparotomy. Besides this, there is always a peritoneal exudation. The permeability (not resorption) of the intestine is increased, and peptones as well as amino-acids were found in the exudate. The increased antitryptic titer of the blood in ileus patients pointed to the possibility of a poisoning with trypsin. Preliminary injections of trypsin or injection of 300 c.c. of blood from such dogs prevented death in experimental ileus. Small quantities (6 c.c.) of blood from diabetic patients with its high antitrypsin content had the same effect. The method has not been tested in patients because sufficient amounts of such blood were not available until Saxl and Kelen found that a good antitryptic serum may be obtained also by feeding dogs with trypsin.

Action of Cathode Rays on Germs.—Angerer, Pauli and Redwitz found that cathode rays applied at a short distance kill bacteria and spores within a few seconds. They disinfected pus only to a depth of 0.1 mm. The action was also manifest in experimental superficial wounds, which were irradiated immediately after infection.

Jahrbuch für Kinderheilkunde, Berlin

110: 127-252 (Oct.) 1925

*Intestinal Anaerobes in Infants. H. Kleinschmidt.—p. 127.
Adhesive Pericarditis and Cardiolysis in Children. W. Schaefer.—p. 142.
Ammonia Excretion in Infants. K. Klinke.—p. 159.
Sporadic Cretinism. F. Thoenes.—p. 167.
Origin of Bifidus Flora. A. Adam.—p. 186.
**Pathogenesis of Herter's Infantilism.* Freise and Jahr.—p. 205.

Intestinal Anaerobes in Infants.—Kleinschmidt investigated the anaerobic microbes in the calcium soap stools of infants. According to Langstein, the light color of these stools is not due to a deficient secretion of bile, but to the strong reduction of bilirubin. Three to four different species of bacilli were cultivated from every such stool. Fraenkel's gas bacillus, which was present in five out of eight stools, reduced bilirubin constantly. Of the other anaerobic germs, only certain strains, and only in mutual association or combination with colon bacilli, produced urobilin. He did not observe a complete destruction of the bilirubin molecule.

Pathogenesis of Herter's Infantilism.—Freise and Jahr studied the metabolism in two cases of Herter's intestinal infantilism (coeliac disease). They confirm the low utilization of carbohydrates and especially of fat and salts. They found clinically and roentgenologically that this is due to the increased motility of the stomach, small intestine and the proximad part of the colon. After calming of these parts by opium (less by atropin), the utilization became almost normal, together with a remarkable clinical improvement. They conclude that the syndrome is a vegetative neurosis, forming a part of a weakness of the whole nervous system of these children

Klinische Wochenschrift, Berlin

4: 2041-2088 (Oct. 22) 1925

Sensibility of Abdominal Cavity. M. Kappis—p 2041 C'cn, p 2089
Obesity and Specific Dynamic Action. H W Knipping—p 2047
Improved Serologic Technic H Sellheim—p 2049
*Genesis of Epileptic Seizure F. Georgi—p 2053
Uhlenhuth's Antituberculosis Serum H Fernbach—p 2056
*Chlorids, Hunger and Gastric Secretion C Jakle—p 2059
Tuberculin by Mouth F Kostler—p 2061
Specific Dynamic Action of Proteins O Gottche—p 2062
Encephalography with Iodized Oil. J. Schuster—p 2064
*Action of Ions and Pituitary on Blood Sugar. E Kylin—p 2068
Action of Arsphenamin on Frog's Heart F Jacobsohn—p 2068
Sedimentation Test K. Berliner—p 2069
Chemical Physiology in Teaching F Knoop—p 2072
Balneotherapy of Arthritis Muskat.—p. 2086.

Genesis of Epileptic Seizure.—Georgi examined the signs of stability of blood colloids (sedimentation and fragility of erythrocytes, viscosity, refraction, coagulation, etc) during hyperpnea He found remarkable changes which cause him to differentiate between proteinogenic changes of stability (pregnancy, fever, etc.) and ionogenic (in hyperpnea) He attributes the seizure to a coupling of various factors: disturbed metabolism, ionogenic changes of stability of colloids, —especially of the colloids in membranes—and a pathologic change of the cortex

Uhlenhuth's Antituberculosis Serum.—Fernbach concludes from his experiments that Uhlenhuth's serum, obtained by immunization of cattle with tubercle bacilli, contains tuberculin

Chlorids, Hunger and Gastric Secretion.—Jakle finds that the amount of sodium chlorid in the diet does not influence the acidity of the gastric secretion.

Action of Ions and Pituitary on Blood Sugar.—Kylin found that a preliminary injection of potassium chlorid enhances the hyperglycemic action of pituitary extracts. Calcium chlorid lowers it.

Action of Arsphenamin on Frog's Heart.—Jacobsohn found that arsphenamin acts on the frog heart the same way as arsenic or potassium. Its action can be compensated by calcium.

Medizinische Klinik, Berlin

21: 1599 1634 (Oct. 23) 1925

*Treatment of Anal Fissure F. Pels Leusden—p 1599.
Basal Metabolism W. Arnoldi.—p 1601
*Topovaccinotherapy J Citron and H Picard—p 1606 C'cn
Cyst of Common Bile Duct R Pamperl—p 1608
*Hemoglobin Resistance in Anemias T Wörpel—p 1610
Varix of Longitudinal Sinus A M Marx—p 1612.
*Disease of Interlobar Fissure F. Deutsch—p 1614
Deep Peritonsillar Abscess W. Haardt—p 1615 C'cn, p 1650
Oral Murmur from Subclavian Artery. B Cohn—p 1617
Serology in Dark Field Illumination Hilgers and Kötzing—p 1618
Dry Insulin J. Preuss and A Jacoby—p 1619
Recent Works on Neurology and Psychiatry. K Singer.—p 1621

Treatment of Anal Fissure.—Pels Leusden recommends dilatation of the sphincter under general or local anesthesia.

Topovaccinotherapy.—Citron and Picard trace the history of artificial local immunization—"topovaccinotherapy"—to Wassermann's and Citron's early studies Yet they employ now vaccines prepared with Besredka's method, and report excellent results in sixty cases of cellulitis, mastitis, osteomyelitis, erysipelas or empyema.

Hemoglobin Resistance in Anemias.—Wörpel determined the time of disappearance of the oxyhemoglobin spectrum after addition of one fourth normal sodium hydroxid to the hemoglobin solution. It ranged from fifty-five to sixty-five seconds in healthy controls and secondary anemia In eleven of twelve cases of pernicious anemia, the time was prolonged (up to 190 seconds).

Disease of Interlobar Fissure.—Deutsch believes that a pain localized in the right fourth anterior intercostal space, radiating into the axilla and the shoulder region up to the neck, is characteristic of some pathologic process in the interlobar fissure. The fifth intercostal space in the axilla may be tender.

Monatsschrift für Geb. und Gynäkologie, Berlin

71: 1-120 (Oct.) 1925

Obstetric Twilight Sleep H Fuchs—p 1.
*Self-Help of Child in Delivery? H. Küstner—p 14.
Genesis of Metritis Dissecans K. Fink—p 22
Grave Nosebleed in Pregnancy H. von Broich—p 25.
*Ruptures of the Uterus H Heidler—p. 33
Virulence of Streptococci. R Tateyama—p 46
Paravaginal Neuroma P. Bohnen—p 51.
*Patency of the Tubes D v Ott—p 58
Surgery of Tubes in Sterility F Unterberger.—p. 63.
Sterility and Salpingostomy O Ritter—p 70
Cystic Sarcomas of the Uterus G. Halter—p 82.
Melanosarcoma of Vulva and Hamartoma of Uterus. R. Tauber—p 95

Self-Help of Child in Delivery?—Kustner observed rhythmic extension movements of the head, when putting new-born infants into the position in which they had been born. A slight pressure on the forehead and occiput provokes another type of rhythmic movement. The child presses his face down and raises the occiput, fitting the head better into the space between the hands of the experimenter. He points out that the muscles of the neck are strong in new-born infants. There is an analogy in the chicken, which has to break the shell by movements of the head. It is probable that these reflex movements in the new-born may have aided in the delivery.

Ruptures of the Uterus.—Heidler emphasizes that the labor pains may persist in spite of the rupture of the uterus, unless the fetus is in the peritoneal cavity. He describes nine atypical cases

Test for Patency of the Tubes.—Ott prefers intraperitoneal injection of a suspension of charcoal to Rubin's method.

Monatsschrift für Kinderheilkunde, Leipzig

31: 1 96 (Oct.) 1925

Insulin in Children R Freise and K Choremis—p. 1.
*Liver Chemistry in Diarrhea S Rosenbaum—p 15.
Etiology of Chronic Pyuria W. Courtin—p 24.
Acid Milk Mixtures in Infant Feeding H. Vogt—p 30.
A Tonic Neck Reflex in Infants O. Tezner—p 40
*The Breslau Children Beginning School. S Samelson—p 44
Exfoliating Dermatitis of the New Born O. Herz—p. 60.
*Treatment of Congenital Syphilis C. Stamm—p. 63.
Causes of Backwardness in Schools E Nitsch—p 65
Dilatation of the Heart After Influenza J Lukács and K Waltner—p 72.
Internal Secretions and Malnutrition in Infants P. Heim—p 74
"Liver Function Test in Infants" A. Mertz and E. Rominger.—p 82.

Liver Chemistry in Diarrhea.—Rosenbaum found in infants an accumulation of fat and loss of glycogen in the liver when the diarrhea had entailed considerable dehydration Both these changes may be prevented by prolonged administration of insulin. Yet this action is not constant, and it does not influence the toxic symptoms.

The Breslau Children Beginning School.—Samelson attributes the inferiority of the "war children" not to underfeeding alone. The wrong qualitative composition of the food played also a rôle The lack of coal and consequent bad ventilation, the employment of the mothers, with the resulting lack of normal sleep of the children, and many other factors are overlooked by those who attribute everything to the lack of food.

Treatment of Congenital Syphilis.—In treating infants, Stamm had much better results with bismuth preparations than with other methods of treatment for congenital syphilis.

Münchener medizinische Wochenschrift, Munich

72: 1815-1862 (Oct. 23) 1925

Revision of Neuroses. O. Bumke.—p. 1815.
The Rumpel-Leede Phenomenon. Walterhöfer.—p. 1819.
Anhydrosugar in Diabetes. W. Nonnenbruch.—p. 1821.
Preparation of Autovaccines. E. J. Orsós.—p. 1823.
Postoperative Retention of Urine. E. Krieger.—p. 1826.
Paralysis Agitans and Parkinsonism. W. Kühl.—p. 1827.
Heliotherapy. Lissmann.—p. 1830
Significance of Russia in Medical Geography. H. Zeiss.—p. 1834.
Otogenous Sepsis. H. Malten.—p. 1842.
"Hypnosis and the Vegetative System." R. Laudenheimer.—p. 1843.
"Hard Spots in Muscles." K. Port.—p. 1843.
Camphor Treatment. Gürber.—p. 1844.
Tuberculosis Instruction in Schools. Kayser-Petersen.—p. 1845.
Material in Children's Sanatoriums. R. Ley.—p. 1847.
Leidenfrost as Precursor of Cellular Theory. Hildebrand.—p. 1848.
Michelangelo in the Opinion of Contemporary Physicians. E. Ebstein.—p. 1849.

Wiener klinische Wochenschrift, Vienna

38: 1123-1150 (Oct. 15) 1925

Cholecystography. F. Eisler and W. Nyiri.—p. 1123.
*The Epinephrin Reaction. J. Gottesmann.—p. 1125.
*Emotions and Metabolism. F. Deutsch.—p. 1127.
*Arsphenamin and the Reticulo-Endothelial System. Del Baere.—p. 1130.
Treatment of Hypogalactia. F. Ornstein.—p. 1131.
"Prevention of Hydrophobia in Dogs." J. Schnürer.—p. 1133. Reply. B. Busson.—p. 1134.
Transplantation of Testis. H. Steindl. Supplement.—p. 1-24.

The Epinephrin Reaction.—Gottesmann found constantly from three to eight minutes after subcutaneous injections of 1 c.c. of a 0.1 per cent. solution of epinephrin, a lowering of the diastolic pressure which lasted for hours. This was especially pronounced in patients in whom the systolic pressure showed a marked rise. He denies the possibility of diagnosis of an affection of the kidney vessels by this test. He prefers the subcutaneous injection to the intravenous.

Emotions and Metabolism.—Deutsch used hypnosis to induce emotions of fright. It increased the respiratory metabolism except in one case in which the fright produced a collapse. The metabolism was considerably lowered then.

Arsphenamin and the Reticulo-Endothelial System.—Del Baere found that an intravenous injection of neo-arsphenamin retards the time of disappearance of injected congo red from the blood. He concludes that it blocks the reticulo-endothelial cells.

Zeitschrift für Tuberkulose, Leipzig

43: 345-440 (Oct.) 1925

*Tuberculosis Infection in Physicians and Nurses. Kirchner.—p. 345.
The Tuberculous Focus. A. Jesionek.—p. 355. C'cn.
*Chemistry of Tubercle Bacilli. H. Popper and J. Warkany.—p. 368.
Besredka's Test. E. Guth.—p. 372.
Granules of Tubercle Bacilli. W. A. Lubarski.—p. 375.
"Pulmonary Tuberculosis in Lithuania." Kogan.—p. 379. Reply. Kairiukschtis.—p. 380.
The Climatologic Congress at Davos. T. Janssen.—p. 380.
Teaching Social Hygiene. O. Keiner.—p. 383.

Tuberculosis Infection in Physicians and Nurses.—Kirchner finds that a transmission of tuberculosis to physicians or nurses is rare in modern hospitals. It occurs if the physician or nurse is not always conscious of the danger, and if the patients are not instructed.

Chemistry of Tubercle Bacilli.—Popper and Warkany found 1.1 per cent. of tryptophan and 1.4 per cent. of tyrosin in tubercle bacilli. There was no difference between the strains grown in bouillon or in a synthetic medium containing asparagin. Consequently the tubercle bacilli are able to produce aromatic amino-acids (cyclopoiesis) like higher plants.

Zeitschrift für urologische Chirurgie, Berlin

18: *237-337 (Oct. 20) 1925*

*Essential Hematuria. J. Gottlieb.—p. 237.
Kidney Stones. J. Hellström.—p. 248.
Tumors of Spermatic Cord and Epididymis. K. Fritzler.—p. 271.
*Congenital Diverticula of the Bladder. L. Lurz.—p. 278.
*Pregl's Kidney Function Test. F. Ody.—p. 300.

Essential Hematuria.—Gottlieb denies the existence of "essential hematuria." He prefers the term "bleeding from a small focus."

Congenital Diverticula of the Bladder.—Lurz finds that only the predisposition is congenital. The diverticulum is of the pulsion type, and localizes at points where the musculature is weak. He reports an instance of practically the same condition in father and son. The pressure in the bladder is higher than in the diverticulum.

Pregl's *Kidney Function* Test.—Ody shows that Pregl's kidney function test, as recommended by Haberer, is of little, if any use. Its only value is in the auxiliary method of determining the specific gravity of urine in a small portion.

Zentralblatt für Chirurgie, Leipzig

52: 2401-2464 (Oct. 24) 1925

Treatment of High Intestinal Fistulas. R. Pamperl.—p. 2402.
*Resection of Choroid Plexus in Epilepsy. E. Pólya.—p. 2404.
*Antipepsin in Gastric Ulcer. Hilarowicz and Mozolowski.—p. 2410.
"Inferiority" of Scar Tissue. W. Wolf.—p. 2414.
Primary Healing. J. Vigyázó.—p. 2415.

Resection of Choroid Plexus in Epilepsy.—Pólya's patient was a boy, suffering from epilepsy due to a posttraumatic cyst. He opened the cyst, tore off a piece of the choroid plexus, and the patient recovered without a fistula.

Antipepsin in Gastric Ulcer.—Hilarowicz and Mozolowski find that the antipeptic action of the blood serum is due only to its buffer content which changes the hydrogen ion concentration of the pepsin solution. They conclude that there is no antipepsin.

Zentralblatt für Gynäkologie, Leipzig

49: 2321-2384 (Oct. 17) 1925

Physiology of Fallopian Tube. F. von Mikulicz-Radecki and W. Nahmmacher.—p. 2322.
*Tubal Sterilization. B. Waser.—p. 2327.
Uterine Cancer from Heterotopic Epithelium. C. Becker.—p. 2333.
Sterilization in Anemia of Pregnancy? F. C. Hilgenberg.—p. 2336.
Two Rare Malformations. R. Mandelbaum.—p. 2338.
Amputation of Uterus in Prolapse. M. Samuel.—p. 2343.
Tumor of Placenta. L. von Toldy.—p. 2348.
Coiling of Cord Impeding Version. G. Maroudis.—p. 2351.

Tubal Sterilization.—Waser reports on 225 sterilizing interventions using the so-called Madlener method (crushing the tube with an enterotribe and ligation). There was only one failure. The indications for the operation in this case had been the exaggerated erotic tendencies of the perhaps feebleminded girl. She had an extra-uterine pregnancy eight years later. In spite of the failure in this case, he is convinced that the method is safe, if correctly performed. It had been described by Friedemann four years before Madlener.

Časopis lékařů českých, Prague

64: 1501-1536 (Oct. 17) 1925

*Calculi in Lower Part of Ureter. K. Neuwirt.—p. 1501.
*Pituitary Tumor in Pregnancy. V. Vejdovský.—p. 1504.
*Compression of the Duodenum in Enteroptosis. V. Novák.—p. 1507.
Blood Lipase and Fatty Liver in Depancreatized Dogs. I. Mačela.—p. 1512.
*Action of Trypsin on Insulin. I. Mačela.—p. 1515.
Loose Bodies in Joints. V. Brezovnik.—p. 1518. C'cn.
Spontaneous Remissions of General Paralysis. O. Janota.—p. 1522.
Measuring Conductivity and Capacity of Tissues. Podrouzek.—p. 1524.
*Treatment of Tetanus. E. Rychlík.—p. 1524.
*Periarterial Sympathectomy. V. Novák.—p. 1528. Begun, p. 1492.

Calculi of Lower Part of Ureter.—Neuwirt reports on eight cases. In each one a different endovesical method was used for removal of the calculus. He also mentions his former advice to try anesthesia of the renal nerves (Kappis' method or paravertebral).

Pituitary Tumor in Pregnancy.—Vejdovský's patient had symptoms of a pituitary tumor, which became grave during a pregnancy. Roentgen therapy improved her vision and cured the headaches. The termination of the pregnancy (healthy child) also contributed to the favorable outcome.

Compression of the Duodenum in Enteroptosis.—Novák observed five cases of chronic compression of the lower part of the duodenum by the root of the mesentery in splanchnoptosis. The roentgenologic diagnosis is easy. If conservative treatment fails, duodenojejunostomy (preferably inframesocolonic) is indicated.

Action of Trypsin on Insulin.—Mačela confirms Epstein's findings on the reversibility of the inactivating action of trypsin on insulin. The optimum of the reaction was between p_H 2 and 3, which is identical with the hydrogen ion concentration of Lilly's insulin. His findings differ from Epstein's in the absence of spasms after the injection of the reactivated insulin. Besides this, the blood sugar never fell below 0.045 per cent.

Treatment of Tetanus.—Rychlik treats tetanus by intraspinal injections of 0.12 gm. of procain and 3 c.c. of specific antiserum. One of four patients recovered practically immediately; two died. He had perfect results with the injection of procain in nine cases of eclampsia.

Periarterial Sympathectomy.—Novák obtained good results by simple opening of the sheath of the artery and freeing it from inflammatory adhesions.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 1751-1858 (Oct. 17) 1925

Medical Education in Europe as Seen by an American. G. van Rijnberk. —p. 1752. C'tn.
*The Sippy Treatment for Gastric Ulcer. J. Schrijver.—p. 1757.
*Experimental Electrocardiography. S. de Boer.—p. 1773.
Progress in Diagnosis of Cavities. Marsman and Siemens.—p. 1785.
Juvenile Muscular Dystrophy on Basis of Congenital Syphilis. Bolten. —p. 1792.
Case of Scurvy with Hemorrhage in Spinal Cord. Prakken.—p. 1796.

The Sippy Treatment of Gastric Ulcer.—Schrijver declares that gastric ulcer is diagnosed far too frequently where it is nonexistent, and that operative treatment is applied too often without the correct indications. The "Sippy cure" is the reaction from all this, but he thinks it is irrational and is more liable to aggravate conditions than improve them, as overcompensation may upset the entire digestive process, and the excess of alkali favors formation of calculi in the kidneys. Schrijver's own method of treating gastric ulcer has proved its usefulness, he says, in years of experience in his own and others' practice, and he explains the reasons for its superiority over other dietetic methods. It consists of bed rest, systematic feeding with milk from 8 a. m. to 10 p. m., a glass an hour, slowly sipped, to a total of 3 or 3.5 liters. Lime water is mixed with the milk, and sometimes a little alkali is given besides. After all bleeding and tenderness have subsided, a milk gruel is allowed three times a day. Our ignorance of the actual cause of gastric ulcers and the occasional extent and intensity of the lesion limit internal treatment, but he insists that his method accomplishes all that can be expected of nonsurgical treatment. He argues that the acid is not the only factor concerned in production of gastric ulcer, and that the acidity found when the ulcer has developed may be quite different from what existed as the ulcer started. Sippy stated that the acidity was within or below normal range in 50 per cent. of his cases. Ulcers on the skin sometimes are as refractory and tenacious as gastric ulcers; the trouble here is from an insufficient blood supply and this may be a factor also in a gastric ulcer. With Schrijver's method, he adds, the bleeding and the pain subside as if by magic, and the patients gain in weight. The stomach gets a rest between the milk feedings which is more complete, he says, than if no food were given at all. The course seldom requires as long as two weeks.

The Ventricle Electrogram in the Frog Obtained by Direct Derivation.—De Boer describes research which sustains the interference theory, and explains Lewis' contradictory findings. He says there is no evidence to date which proves that Purkinje's fibers transmit the impulse ten times as fast as the muscle of the ventricle wall.

Vestnik Microbiologii i Epidemiologii, Saratov

4: 3-118, 1925. Partial Index

Pathogenic Import of Lambliasis. V. Gaivoronsky.—p. 43.
Present Status of Epidemic Jaundice. V. Yakimoff.—p. 50.
*Experimental Gonococcus Ophthalmia. E. Korobkova.—p. 72.
Morphology of Malaria Plasmodia. I. Ioff.—p. 77.
*Effect of Air and Glycerin on Fixed Virus. N. Griaznoff.—p. 83.

Experimental Gonococcus Ophthalmia in Rabbits and Guinea-Pigs.—Korobkova introduced one drop of a 30 or 75 per cent. solution of ox gall in the conjunctival sac of both eyes in rabbits and guinea-pigs. A gonococcus emulsion was instilled in one eye of the animal four hours later. A pronounced conjunctivitis was manifest the next day and keratitis the third day, soon followed by ulceration of the cornea. In the mild cases, the ophthalmia ran its course in twelve or fourteen days, and entirely disappeared in two or three weeks. The lesions were graver in rabbits, causing partial blindness in some of them. Only five of twenty rabbits and three of five guinea-pigs resisted the inoculation. The infection did not induce immunity either in the eye involved or in its sound mate.

Action of Air and Glycerin on Fixed Virus.—Griaznoff draws from his experiments the conclusion that a rapid or slow desiccation does not reduce the virulence of fixed virus, if the presence of oxygen can be excluded. Under good aëration the fixed virus may lose its virulence within three or four days, even in a humid environment. Glycerin conserves the fixed virus in so far as it protects it against contact with the air oxygen. This is the reason why fixed virus can be conserved likewise in olive oil, agar and gelatin.

Norsk Magazin for Lægevidenskaben, Oslo

86: 1045-1172 (Oct.) 1925

*Sadistic Erotic Murder? F. Harbitz and R. Vogt.—p. 1045.
*"Unfinished Business." H. A. Dedichen.—p. 1056.
Congenital Stenosis of the Aorta (Sudden Death at Age of 43). G. Lützow-Holm.—p. 1066.
Idem in Three Adults. E. H. Hansteen.—p. 1073.
*Influence of Age on Childbearing. G. Schaanning.—p. 1075.
*Operative Treatment of Gastric and Duodenal Ulcer. C. R. Bull. Supplement.—pp. 1-213.

Murder with Extreme Mutilations.—Harbitz and Vogt describe a murder case with sadistic erotic features. The murderer was under the influence of alcohol at the time, and had only the slightest and vaguest remembrance of what had happened, but this excluded the assumption of unconsciousness. The woman's clothes and body were slashed, and chunks cut out, but the hymen was not torn and the microscope showed no spermatozoa in the vagina. The question was whether the young man was conscious of his actions that night or not. Nothing suggesting atypical reactions to alcohol had ever been noted before, nor before the murder that night. He burned some of his bloodstained clothing—including his underdrawers—and put some to soak. A bunch of the woman's hair was found inside his trousers, and he said he had a vague remembrance of pulling out the hair and stuffing it into the opening in his trousers. He was given a ten year prison sentence.

Unsolved Problems.—Dedichen refers among others to the treatment of habitual drinkers and addicts, from the standpoint of society. Their addiction is a sign of mental disease, and he pleads for having the mentally diseased given proper treatment the same as those with any other disease.

Influence of Age on Childbearing.—Schaanning relates that of 3,457 normal primiparas, 46.8 per cent. of those aged 41 to 45 had to be delivered artificially; 27 per cent. of those between 31 to 35, and 3 per cent. of those of 17 to 20. The mortality of the children in the same age groups was 12.9; 3.08 and 1.38 per cent. Breech presentations occurred in 7.7 to 2.6 per cent., and rupture of the tentorium in two of 2,419 childbirths under 30 and in eleven of 1,012 above 30. Elderly primiparas should be classed as possible cesarean section cases from the start. The wish for a living child may sometimes decide the question. In the last series of seventy-three cesarean sections, none of the women died, and all but 2 per cent. of the children were saved.

Operative Treatment of Chronic Gastric and Duodenal Ulcer.—Bull gives a bibliography of 210 titles in concluding his 213 page analysis of the ultimate outcome in ninety-four cases, including sixteen resections. A long English summary and sixteen roentgenograms complete the article. He insists that gastro-enterostomy is generally followed by the healing of the ulcer. The new outlet should be made in the very lowest point and on the right side to utilize the force of gravity. No instance of cancer from a simple ulcer was known. A recurring or new ulcer developed in 6.5 per cent. after gastro-enterostomy and in 18.5 per cent. after resection; and a peptic ulcer in 1.3 per cent. after gastro-enterostomy; none after resection.

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INTRAVENOUS USE OF DYES *

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When interest in the triphenylmethane group of dyes was reawakened by the studies of their selective powers, reported in 1912 and successive years, the question of their adaptability to intravenous injections immediately arose and (of course, with the ultimate treatment of septicemia in mind) Herz and I,[1] in 1913, studied the fate of gentian violet in the animal body. We showed conclusively that, after intravenous injection, this dye disappeared from the blood stream in about one hour and a quarter. We also made numerous experiments at that time to see whether bacteria floating in the blood stream could be killed by injected dye. The general conclusion of all of this work was stated, in 1924, as follows: "I have never been able to kill organisms circulating in the blood by intravascular injection of gentian violet. At the present time there is nothing to suggest that it is now possible to do for bacteria what quinin does for malaria." There is the soundest kind of experimental evidence for this statement, and the observations have been amply confirmed by others, most recently by Gatch.[2] Nevertheless, a considerable body of evidence has accumulated from the clinical field which appears to conflict with this conclusion, and it is of a kind which, far from dismissing with a gesture, we are forced to take into account. It is our present purpose to examine some of the fundamental conceptions in this field to see whether apparent contradictions between experimental and clinical results may be harmonized and to determine to what extent the reigning hypotheses in the chemotherapeutic field are justified by fact.

One must begin with definitions, and septicemia is the first word to be defined. So loosely has this word been used that it is now difficult to put it within the confines of logic. The word indicates certainly, at the very least, that pathogenic organisms are present in the blood. But if we define septicemia as a condition in which bacteria may be demonstrated in the circulating blood, we include too much, for we include transient conditions such as the bacteremia that is doubtless often present in healthy persons after meals, and we include such diseases as typhoid fever and pneumonia, which by reason of specific manifestations are clinical entities, and if regarded as septicemia at all are very much more than septicemia. Since the cultural studies of the blood in known cases of septicemia may vary in result from day to day, it is impossible to state how frequent septicemia is, but it is quite likely that in more diseases than is usually supposed the causative bacteria at some stage make their way into the blood. In a disease such as syphilis, the moment the responsible organism leaves the local lesion and escapes into the blood stream is marked by a complete change in clinical picture from primary to secondary syphilis, and we are made aware of what has happened. This is not always the case in diseases in which constitutional symptoms are present from the start, and in these conditions the distinction between symptoms due to absorption of toxic products and those caused by the presence of bacteria in the blood cannot be sharply drawn. Just when a frank lobar pneumonia changes to a septicemia is not always easy to say, and when the change has occurred one would doubtless continue to describe the condition as a case of pneumonia with pneumococci in the blood rather than a case of septicemia.

A definition of septicemia free from all possible objections would thus appear to be impossible to frame. Perhaps we might describe the condition as one which arises when, as a result or complication of a focal infection (which itself may have produced severe symptoms, slight symptoms, or no symptoms at all), the protective barrier between bacteria and host has broken down. Organisms have therefore appeared in the blood, the disease has ceased to be local, and its gravity has at once greatly increased. This focal infection may be obvious (like an inflamed tonsil), or it may be hidden (like an infected heart valve), or it may be difficult and occasionally impossible to demonstrate; but portal of entry into the blood stream there must have been. It is a common mistake to imagine that in septicemia bacteria travel for an indefinite period round and round in the blood stream, reproducing as they go. This is not an accurate picture of what occurs. The micro-organisms have not originated in the blood. They have come somewhence and are going somewhither. Their source is the focus of infection; their destiny, other organs, in which they may set up lesions, or the filtering organs (lymph glands, etc.) where those of them which have escaped the antibacterial defensive mechanism of the circulating blood are either in part or in whole destroyed or eliminated. Eliminate their source, as by complete excision of the focus, and you cut off the supply. They will then fairly soon disappear from the blood stream, provided they have not already produced secondary foci elsewhere, and provided the defensive mechanism of the body has not already completely broken down. What happens is similar to what happens when a water

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* Read at a Symposium of the American Chemical Society, Baltimore, April 10, 1925

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[1] Churchman and Herz: J. Exper. Med. **18**, No. 5, 1913.

[2] Gatch, W. D.; Trusler, H. M., and Owen, J. E: Treatment of General Septicemia by Gentian Violet and Mercurochrome-220 Soluble, J. A. M. A. **85**: 894 (Sept 19) 1925.

supply is purified by removing an offending source in the water shed; organisms already in the stream soon disappear in natural ways. It is, of course, not strictly true to imagine that no damaging process is set up by the bacteria as they travel in the vessels. But the damage they do there is relatively slight compared with the damage they do at their source and at their destination. The mere presence of the bacteria in the blood stream is not, therefore, the most serious feature. The most serious feature is the fact that they are being transmitted by the blood stream, that a barrier has given way, and that a local disease is becoming general.

Considerations of this sort bring out, though it is hoped they do not overemphasize, the transitional nature of septicemia, a word which, while purporting to describe a definite disease, really includes a large number of different diseases as unrelated in clinical picture, in pathologic basis and in gravity of prognosis as measles and typhoid fever.

The matter is further complicated by the fact that the significance of septicemia is in large part determined by the character of the particular organism that has appeared in the blood stream. A septicemia caused by *Staphylococcus aureus* is one thing, a septicemia caused by *Streptococcus hemolyticus* is quite another, and a septicemia in which *Bacillus anthracis* is isolated from the blood is another, and very different still. Thus, a patient may present himself with a local infection (let us say a boil) and with the causative organism already in the blood. The focus is readily accessible to adequate treatment; the organism isolated from the blood may be only mildly virulent, and no lesions may have been produced elsewhere in the body. His malady is in no way to be compared with that of a patient seriously ill from an ulcerative endocarditis caused by a virulent *Streptococcus viridans,* with organisms in the blood and a streptococcus pneumonia.

These distinctions are elementary, but they are by no means always made. They are gone into in some detail here because failure to make them may account, in part, for the conflicting evidence as to the value of the dyes in the treatment of septicemia. That a *Staphylococcus aureus* septicemia, arising from a lesion susceptible to adequate surgical treatment, has subsided after intravenous injection of gentian violet is no reason whatever for expecting a septicemia caused by *Streptococcus hemolyticus* which has reached the blood stream from an acute endocarditis to subside. Failure to take into account the variation in the seriousness of different types of septicemia may account in part for the conflicting evidence as to the value of the dyes in the treatment of this condition, and this probable source of error is the first to which I wish to call attention.

What is the nature of the clinical evidence for the value of the dyes in septicemia? Its nature may be illustrated by the citation of a case.

An infant, aged 15 months, was admitted to the wards, suffering from a severe bacillary dysentery and otitis media, and had developed large multiple staphylococcus abscesses and staphylococcus septicemia. During the three weeks previous to intravenous treatment with gentian violet, he had grown gradually worse. His temperature had reached 106, and he was moribund. *Staphylococcus aureus* had been demonstrated in two blood cultures made during the three days preceding the first injection of dye. There were about ten colonies per cubic centimeter of blood, a massive infection. Three intravenous injections of gentian violet were given at twenty-four hour intervals. Blood cultures made immediately preceding the second and third injections were sterile. After the third injection an enormously enlarged spleen promptly disappeared, the temperature fell, improvement at once set in, the abscesses healed, and he was discharged from the hospital two months later entirely well.

Now what value is to be attached to an observation of this kind? Certainly, it is an observation not to be lightly dismissed. Yet we cannot avoid the admission that the results may have been a pure coincidence. The promptness with which cure followed treatment in this patient, and in a number of other striking ones that might be cited,[3] may seem to make such an explanation far fetched. Unfortunately, similar coincidences are known to occur and the science of therapeutics is littered with ill advised conclusions due to failure to recognize the possibility that sequences of this kind may be accidental.[4]

Septicemia is unfortunately a disease subject to this kind of misinterpretation. One has only to recall the variety of chemical agents whose injection into the blood stream has been followed by recovery, to be warned against too hasty assumptions that post means propter. For it is well known that, in septicemia, spontaneous recovery does perhaps more often than occasionally occur, and this sometimes even in severe cases. Nevertheless, the coincidence, if coincidence it be, in certain of the cases treated with anilin dyes has been too striking to dismiss without careful scrutiny. Perhaps the most brilliant results have been reported by Young,[3] using sometimes mercurochrome-220 soluble and sometimes gentian violet. One cannot but be struck with the extraordinary promptness in the change in the clinical appearance following immediately on the intraveous use of dyes in many of his cases, and the conclusion which he draws, that the sequence was one of cause and effect, is indeed tempting. One feature of many of the successful cases has been the promptness with which the blood cultures became and remained negative. If this feature were at all constant it would, from the therapeutic standpoint, be even more important than the recovery of the patient, for it would point to the possibility of the desired sterilisans magna for bacterial disease. Unfortunately, it is by no means constant.

In addition to the brilliant recoveries thus far referred to, there is another group of cases which is very puzzling to interpret. A typical instance may be cited.

A girl, aged 10, whom I recently saw in consultation, fell ill of left-sided acute mastoiditis. The mastoid was opened and cleaned out. Following the operation, signs of sinus thrombosis developed. The jugular vein was ligated, and the clot removed from the sinus. Signs of septicemia then appeared, and *Streptococcus hemolyticus* was isolated from the blood. At this time, several weeks after the onset, the girl was very ill indeed, her temperature having reached 106. She had been given blood transfusions, without apparent improvement. Blood cultures were constantly positive. Intravenous injections of gentian violet were advised, and during the next ten days, five were given. The blood transfusions were also continued. After the first four injections of gentian violet, the blood cultures continued positive and the disease was apparently unabated, but following the fifth injection negative cultures were obtained, the symptoms began to subside and the girl made a complete recovery.

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[3] The results in the case here referred to are no less striking than in a number of the cases treated by Young, Hill and Scott with mercurochrome or gentian violet, and their latest publication should be read in order to appreciate the possibilities in this field. Young, H. H.; Hill, J. H., and Scott, W. W.: Treatment of Infections and Infectious Diseases with Mercurochrome-220 Soluble, Arch. Surg. **10**: 813-924 (May) 1925.

[4] This striking result may be compared with the case reported by Gatch (Footnote 2).

In this case, as in many of the reported cases, the picture is complicated by the fact that other therapeutic measures than the injection of the dye were employed and that these are measures which have themselves some efficacy in the treatment of septicemia. What value have complicated cases of this kind as evidence? It is difficult to say.

It is necessary, moreover, to remind ourselves of the fact that while the strikingly successful cases, of which quite a number have accumulated, receive in a question of this sort due consideration, the failures run some risk of being overlooked. How numerous these have been no one knows, but their number has been too large to be dismissed. The only convincing way in which this question can be decided statistically will be by comparing the mortality rate of a large series of septicemia cases treated with the dyes with that of a similar series of untreated cases, and no such comparison has as yet been attempted.

So much by way of warning to those who are tempted to overenthusiasm for chemotherapy by means of dyes. The tendency to dismiss with a gesture data which cannot be explained away is equally unfortunate with zealotry, and those who have argued that, since failures occur, no attention need be paid to successes should be reminded that in view of the protean nature of septicemia a perfect recovery record is, even if the dyes prove to be ideal chemotherapeutic agents, by no means to be expected. We should be prepared for and not frightened by many failures. Even in the most highly developed sphere of chemotherapy (in the treatment of syphilis and malaria), many failures occur, and the intraspinal injection of antimeningococcic serum is by no means to be scorned because it fails in nearly 30 per cent. of the cases. Certainly no chemotherapeutic substance, however effective, may be expected to save cases in which the focal infection is inaccessible, in which complications (themselves likely to prove fatal) have already developed, in which the vital forces have been drained by the intoxication beyond the point of recovery, and in which strains of peculiarly resistant bacteria are present. The antagonist in this field is no less obligated to explain successes than the exponent to explain failures.

It might be supposed that the difficulties of reaching a sound conclusion in this question could be readily overcome by experimental study, but workers in this field are sorely handicapped by the fact that the very procedures they would employ to find out the truth have proved none too reliable. That the results of experiments made in glass on the phenomena of bacteriostasis cannot always satisfactorily be transferred to the animal body is well enough known. As a rule, chemical agents are less effective against organisms in the living body than against the same organisms in the test tube. The difference in behavior is sometimes, strangely enough, in the opposite sense, as Ehrlich showed so conclusively for some of the arsenicals.

It is also an unfortunate fact, and one which is not widely appreciated, that a true bacterial septicemia, corresponding accurately to the disease in man, is difficult to produce in laboratory animals. The facts, therefore, are not easy to obtain by experiments. This is one of the reasons, among many, why the chemotherapy of bacterial disease lags so far behind the chemotherapy of parasitic diseases. This lack of a trustworthy instrument of observation has so discouraged certain workers in this field as to make them abandon the quest and trust the future to empiricism. Empiricism in therapeutics has given us quinin, mercury and the iodids, and is hardly, therefore, to be treated with contempt. But it is discouraging to find that it cannot yet, in the case of bacterial diseases, be replaced by experimental chemotherapy, as has been so successfully done in the case of parasitic diseases. There is, however, no reason to despair. Laboratory methods still supply ample opportunity for experimentation which is continually uncovering good leads. Only, there will always be a large element of chance in translating the good leads into important therapeutic results.

It has been indicated that the discrepancy between the successes (granting for the moment that they are not accidental) and the failures may, in part, be harmonized by bearing in mind that no two cases of septicemia are exactly alike and that, therefore, uniform results are not to be expected. It is possible to harmonize also the apparent discrepancy between the absence of theoretical evidence for expecting the intravenous use of dyes to be of avail in the treatment of septicemia and the moderate degree of clinical success which seems to have been obtained.

The modern attempts to combat septicemia by chemotherapeutic means are entirely dominated by two conceptions of Ehrlich. These conceptions are so ingenious, they were based on such skilful experimentation, they presented to the mind so clear a picture of therapeutic principles, and they led in Ehrlich's hands to such splendid results, that they were adopted with enthusiasm in the hope that they could be transferred from the parasitocidal field, in which Ehrlich's triumphs had been won, to the bacterial field still largely uncultivated. There were facts, as Ehrlich himself knew full well, that could not be entirely squared with the theory. These facts, and others which have since come to light, have led to considerable modification of the fundamental conceptions, so that certain observers are now inclined to doubt whether the chemotherapeutic success which Ehrlich achieved is really based on the mechanism he hypothecated.

The first of the fundamental conceptions of Ehrlich was the theory that curative substances effective against organisms in the blood stream owed their efficiency entirely to specific chemical affinities between the drug and the parasite. Ehrlich's early idea probably was that the contact between the parasite and parasitocidal substance which did the work took place in the circulating blood; but he found that atoxyl was more effective in the animal body than in the test tube. He therefore modified his views by suggesting that atoxyl did its work by being changed in the body into a trypanocidal substance or by provoking the formation of such a substance in the tissues. His doctrine of specific chemical affinities in its simple and diagrammatic form therefore underwent considerable modification.

Ehrlich himself was, of course, perfectly familiar with what occurs in septicemia. But it is a common mistake since his time to assume that bacteria in the blood keep coursing about in the stream more or less indefinitely, and that injected antibacterial substances course about with them so that they have ample time in which to do their work. As a matter of fact, chemical substances do not remain long unchanged in the blood, as I have shown for gentian violet, and as Hatcher has recently shown in a much more striking way for quinin. Furthermore, the length of time which any given organism spends in the blood stream cannot be very great. If the supply of organisms be checked by excising the focus or blocking it off (as is done in ligation of the jugular vein for sinus thrombosis), the bacteria as a rule soon disappear. It is therefore clear that the time which the antibacterial substance has to exercise its function against a given organism in the blood stream must be quite short and is not to be measured in hours but possibly in seconds. It seems hardly likely that the dyes in the strength in which they have been used in human beings have been able to strike any such sudden blow as this.

Let us for the moment and for the sake of argument abandon the idea that organisms floating in the blood stream are to be killed by the contact made within the vessels, since the drug is present there only in great dilution, and the contact between the drug and the organism may be extremely transient. Will it then be impossible to harmonize, as we set out to do, the apparent success of the dyes in septicemia with physiologic facts? Not necessarily.

In the first place it is possible that the dyes, like atoxyl, are changed in the body into a substance more potent than the mother substance was in the test tube. Or it may be (and this hypothesis is now popular) that the dyes do not act directly but indirectly by stimulating the formation of a powerful bactericidal product in the body. It is unfortunately rather widely believed without, I think, any proof, that acriflavine injected into the blood stream leaves an impression on the serum which has been rendered, through contact with the dye, highly bactericidal. This belief is based on an experiment made by Browning, whose work is not to be lightly criticized, but the conclusion that he draws was, I am convinced, a curious case of misinterpretation. However, it is not impossible that the dyes may stimulate, as certain of the arsenicals are assumed to do, the tissues to produce antibacterial substances, though there is no proof that this change takes place.

Apart from these rather remote guesses, there is another consideration that should engage our attention for a moment. When dyes such as gentian violet are injected into the blood stream, they are rapidly carried to certain organs in which they remain in some concentration for a fairly long period of time. It is possible that at these sites they may have a much better chance of exerting their bacteriostatic effects. Something of this kind may have occurred in the cases of septicemia successfully treated by the dyes and more particularly in the interesting cases of venous thrombosis apparently cured by Shallenberger[5] through intravenous injections of gentian violet. Indeed, one wonders whether something of the kind may not be what really occurs, more often than has been thought, when syphilis is cured by arsphenamin. When the chancre is made to disappear by this drug, we are sure that the effective contact has been made locally and not in the blood stream. In this stage of the disease, spirochetes are not present in the blood, so that the drug must have killed the parasites in the local lesion. Hatcher[6] has recently shown that in the cat, at least, quinin (except in minute traces) is present for not more than one minute after intravenous injection, and, though in the human being it probably remains in the blood a slightly longer time, it disappears very quickly. So that one wonders whether in the cure of malaria, too, the effective contact is not made outside the vessels themselves, possibly in the spleen.

Bacteriostasis (or, better, genesistasis—an inhibition of reproduction) may also have played a part in the results that have been reported in septicemia. This word was introduced by me in the first publication on gentian violet in 1912, and has been constantly employed since because it describes accurately the effect of the dyes on bacteria. This effect is primarily an inhibition. The dye may only stop motility, it may check sporulation, it may prevent fission, it may produce a curious condition of the bacteria which can only be described as suspended animation, a condition in which they lie dormant for long periods of time, finally becoming active and virulent again; or it may cause actual death of the organism. Which of these results is obtained depends on the particular dye and the particular organism used for the experiment, since many of the dyes are quite selective in their action; and, of course, on the strength of the dye and the time of exposure. It is therefore difficult in any given experiment to say whether the organisms have been actually killed or whether one or more of the inhibitory processes referred to has been initiated. It has been experimentally proved, particularly for gentian violet and other triphenylmethane dyes, that, even in very high dilutions, they possess the power of checking the reproductive mechanism of bacteria, and it is quite possible that this bacteriostatic power of therapeutic agents will come to play an important part in the treatment of infection. If the blood stream and through it the tissues could be kept in a condition inimical to the growth of bacteria (and very small amounts of dye might accomplish this purpose), a state of affairs might well be produced in which with this slight aid, though no organisms have actually been killed, the patient might turn defeat into victory. Such a generalized bacteriostasis has never been proved to exist after dyes have been injected, but it is quite likely that it does exist, at least for a short time. In the case of bismuth, Kolle has shown that such a process does actually occur. This observer injected into the ear of syphilized rabbits a bismuth preparation which remained there more or less permanently. So long as the bismuth was present, the spirochetes were prevented by the small amount of the substance absorbed into the circulation from developing; but, the moment the bismuth deposit was removed by excision, reproduction of the dormant organisms at once occurred. I showed ten years ago that *Bacillus anthracis* could lie dormant in the tissues in a similar fashion for many days, suddenly reproducing (when the stain had been sufficiently changed by the tissues) and killing the animals. Both of these are instances of true genesistasis within the animal body.[7]

Another possible explanation of the effect of dyes in septicemia must be considered. It has long been known that chemical substances, and among them the anilin dyes, reduce somewhat the activity of toxins. Behring,[8] in 1889, made observations of this sort with methyl violet, safranin and malachite green. Perhaps the best known work on this subject was done by Flexner and Noguchi,[9] who studied the fluorescent eosin and regarded the success they observed as photodynamic, since light undoubtedly played a part.

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[5] Shallenberger, W. F.: Surg., Gynec. & Obst. **39**: 291 (Sept.) 1924.

[6] Personal communication. Proc. Soc. Exper. Biol. & Med. **22**: 141 (Dec.) 1924.

[7] Churchman: Tr. Tenth Annual Meeting National Association for Study and Prevention of Tuberculosis, 1913.

[8] Behring: Ztschr. f. Hyg. u. Infectionskrankh. **6**: 117, 1889.

[9] Flexner and Noguchi: J. Exper. Med. **8**, 1906. Noguchi: Ibid. **10**: 30, 1908.

Flexner and Noguchi stated that "even in the highly sensitive guinea-pig, tetanic symptoms may be restrained, provided the eosin is brought into close relation with the developing poison before it is fixed by the nervous tissues or reaches the general circulation." And Noguchi, working with snake venom, concluded: "The toxicity of all the venoms (cobra, daboia and crotalus) is more or less diminished by eosin and erythrosin and sunlight." My own experiments on this phase of the subject have led me to conclude that gentian violet in the strengths used for intravenous injection is without effect on toxins, but these experiments have not been very extensively done.[10] It should be borne in mind that mercurochrome-220 soluble is a combination of a metal and a fluorescent dye, and the possibility exists that the good effects which have followed its intravenous use may have been due to a photodynamic process. Even if this is the case, however, it should be remembered that the effect of these dyes is chiefly inhibitory. There is no reason to suppose that they could absolutely neutralize the toxins, but only to suppose that they may hold them in check sufficiently long for the patient to win his own battle; so that a stasis or inhibition of toxin would account for the phenomenon just as a stasis or inhibition of the bacteria, as has been suggested, accounts for them.

The second fundamental hypothesis of Ehrlich was his conception of therapia sterilisans magna; that is to say, complete sterilization at a single "shot" of an animal with a high grade infection. This he posited as the therapeutic ideal, implying if not actually stating that anything less was futile. The epoch making success which crowned his loyalty to this ideal made it quite natural that such an ideal should dominate this field of medicine. As we leave Ehrlich's peculiar domain, which was the development of trypanocidal and spirocheticidal substances, and take up the consideration of the treatment of bacterial disease by way of the blood stream, it is proper to ask whether there are any reasons to justify us in moving away a little from Ehrlich's point of view. It is certain, in the first place, that nature herself does not proceed in this way. She is able, in many cases with success, to combat blood infections; but she does it not at one stroke but by deliberate mobilization of her defenses and by enlisting the support of phagocytosis, antibody production, and so forth. This is no proof that complete sterilization of the blood at a stroke might not be advisable if it were possible, but it does lead us to inquire whether it is absolutely necessary. The fact that septicemic patients often recover spontaneously indicates that the struggle between the host and the invader is usually a close one. In many cases, doubtless, very little aid might be needed to turn the tide of battle in favor of the patient. Such aid might be provided by a partial sterilization or even by the production of conditions in the body, which make it difficult for organisms to grow though none of them had been killed. Certain it is that at the present time a sterilisans magna, in the original Ehrlich sense, is very difficult if not impossible to produce. Would it be advisable to produce it if such a thing were possible? It is by no means certain that it would, at least in every case. If the blood and tissues were invaded by an organism capable of producing an endotoxin, sudden wholesale death of the bacteria followed by lysis and absorption of the freed endotoxin might well produce serious results. Results of this kind do actually follow the injection of large numbers of the nonvirulent *Bacillus prodigiosus*, which promptly undergo lysis with the liberation of toxic products and the production of severe symptoms. Results of a like nature have also been actually reported after the use of substances which probably do bring about a large scale destruction of tubercle bacilli.

Considerations of this kind lead us, then, to the conclusion that the failure of dyes to effect a sterilisans magna under experimental conditions which we can control does not absolutely preclude the possibility of their efficacy in the treatment of septicemia; and we arrive once more at a possible means of harmonizing the apparent conflict between experimental results and clinical observation.

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[10] Churchman, J. W.: Proc. Soc. Exper. Biol. & Med., Feb. 17, 1914.

RENAL FUNCTION

THE RESULTS OF EXPERIMENTAL WORK WITH MORPHIN AND ATROPIN *

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Morphin, or morphin in combination with one of the atropin group, is used by most surgeons prior to operation as an adjuvant to general anesthesia. There are some, however, who do not use it, or who administer it with some concern, especially in urologic conditions when kidney function is poor.

Standard textbooks on the physiologic action of drugs give us very little definite information concerning the action of morphin on the kidneys, and a paper[1] recently published in THE JOURNAL reveals the fact that there is by no means unanimity of opinion among the leading surgeons of the country as to the general utility and safety of this drug in surgical practice.

We may say in the beginning that while the advantages of the drug both before and after operation are obvious, the disadvantages are problematic; and it was with the purpose of determining whether these disadvantages really exist so far as kidney function is concerned that we began some experimental work which, while still incomplete, has yielded interesting results.

Since the results of functional kidney tests by the dye methods roughly parallel those by other methods or all methods combined, we employed indigocarmin intravenously, on account of its convenience, in both our human and our animal experiments, and we claim no more for the accuracy of our work than is generally conceded for this dye as a test of kidney function. We initiated our experiments on ambulant office and dispensary cases, chosen at random, by injecting 5 c.c. of 0.4 per cent. indigocarmin solution intravenously, and then collected the urine at twenty minute intervals for three periods. The appearance time of the dye was noted, and the percentage excreted was estimated separately for each period. The "index of elimination" was then calculated by dividing the percentage of the first period by that of the third. This index has proved a reliable criterion in determining the operability of pathologic cases.[2] As soon as possible after the first experiment, we gave each patient one-fourth grain (16 mg.) of morphin sulphate and ¹⁄₁₅₀ grain (0.4 mg.) of atropin sulphate hypodermically. One half hour after the hypodermic injection, the dye test was repeated as just described.

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* Read before the Section on Urology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] Slocum, M. A.: Morphin: Its Use Before and After Operations, J. A. M. A. **84**: 1264 (April 25) 1925.

Table 1.—*Functional Kidney Tests With Indigocarmin Intravenously, With and Without Morphin Sulphate and Atropin Sulphate Hypodermically One-half Hour Before Each Test*

Case	Date	Hypodermic	Approximate Time, Minutes	Twenty Minute Periods 1	2	3	Total	Index
1	2/ 3	None	4½	18.5	9	2.5	30	7
	1/29	Given	5½	14	7	2	23	7
2	2/ 4	None	3½	27.7	7	2	36.7	13
	2/ 6	Given	3	29.4	4.5	0.75	34.6	39
3	3/ 5	None	5½	18.5	7	2.1	27.6	9
	3/12	Given	5½	19	8	1.5	28.5	12
4	3/11	None	4	17	8	1.5	26.5	11
	3/27	Given	4	25	5	1	31	25
5	3/12	None	6	15	7	2	24	7
	3/15	Given	6	14.5	8	2.5	25	6
6	4/25	None	6	11.7	6.4	2.25	20 3	5
	5/ 7	Given	5	16	9	2.5	27.5	6.4

Table 1 shows the results of these tests in a few typical cases. It will be noted that elimination was, on the average, slightly better after the injection of morphin and atropin, as shown by the appearance time and the total percentage of dye eliminated, and decidedly better according to the index of elimination. These tests were made without any control of fluid intake, but no water was given just before starting the tests. Morphin and atropin were used instead of morphin alone, since this combination is usually employed; and the results are to be interpreted as the effect of the combination.

Another series of tests were made in which phenolsulphonephthalein was used instead of indigocarmin, and the results were not materially different from those of the first series. Kidney function varies considerably from day to day, although the tests may be made, so far as can be arranged, under identical conditions; but the results obtained with these subjects seem sufficiently constant to justify the conclusion that morphin and atropin combined accelerate kidney function slightly, as measured by the dye tests in normal ambulant cases. We may at least conclude that renal secretion is not lessened by the administration of these drugs.

Our experiments on animals were made to determine the effect of morphin and atropin on kidney function, when injected as an adjuvant prior to ether anesthesia.

Indigocarmin, when injected intravenously into normal dogs, appears in the urine usually in from three to five minutes. We had noticed in some earlier experimental work that if indigocarmin was injected into a dog which had previously been subjected to unilateral kidney denervation, the dye appeared in the bladder from one-half to one and one-half minutes earlier from the denervated side than from the normal kidney. If the same dog was subjected to ether anesthesia and the dye then injected, it would appear in normal time from the denervated side but would be considerably delayed on the normal side.

We found that if a normal dog was anesthetized and the indigocarmin was injected immediately, its appearance would be somewhat delayed. If the anesthetic was continued a few minutes before injecting the dye, its appearance was still more delayed. When a dog has been subjected to surgical anesthesia for thirty minutes and indigocarmin solution is then injected, there is such inhibition of kidney function that the dye does not appear in the urine as long as the anesthetic is continued. We have found only one exception to this rule in all our experiments.

There are in the surgical research laboratory of the University of Pennsylvania Graduate School of Medicine six dogs in which both kidneys had been denervated for experimental purposes from nine to twelve months ago.[3] These dogs were all given ether for thirty minutes and indigocarmin was then injected intravenously. In five, the dye appeared in less than five minutes although the ether was continued. These facts influenced us in the manner of conducting the experiments, the results of which are presented in Table 2, and caused us to anticipate somewhat accurately the results that would follow the administration of morphin and atropin prior to ether anesthesia.

These dogs were all subjected to deep ether anesthesia for thirty minutes. Indigocarmin was then injected and the anesthetic was continued. In each case the dye did not appear in the urine within twenty minutes, nor until a variable time after the ether was stopped. A glass catheter was kept in the bladder, which was flushed at short intervals so that the appearance of any dye might be noticed at once. About a week after the first experiment, each dog was given a light dose of morphin and atropin by hypodermic injection. One-half hour later ether was started, and the dog was kept under very profound anesthesia for thirty minutes. We killed several dogs at this stage by giving too much ether, for we wanted to be sure that as much anesthetic was given during the second experiment as during the first. At the end of the thirty minute period of anesthesia, indigocarmin was injected intravenously, and in every instance, as seen by the table, the dye appeared about as soon as would have been the case had the dog not been under an anesthetic. We did have one dog in which the dye failed to appear early as expected, and this dog died of distemper before we were able to repeat the experiment with a larger dose of the narcotic.

Table 2.—*Intravenous Indigocarmin Tests in Dogs With Normal Kidneys*

Dog	Date	Hypodermic of Morphin Sulphate and Atropin ½ Hour Before Ether	Ether, Minutes	Indigocarmin Solution Intravenously, C.c.	Ether Continued, Minutes	Appearance Time, Minutes
1	3/30	None	30	2	26	32
	4/20	1/8 and 1/300	30	2	5	5
2	3/19	None	30	2	22	32
	3/26	1/16 and 1/600	30	2	4	4
3	4/ 9	None	30	2	20	34
	4/16	1/16 and 1/600	30	2	4	4
4	4/30	None	30	2.5	20	42
	5/ 7	1/8 and 1/300	30	2.5	4½	4½
	5/14	1/8 M. S.	30	2.5	5	5
5	5/14	None	30	2	20	20
	5/18	1/8 and 1/300	30	2	3½	3½
6	5/15	1/300 atropin	30	2.5	20	28
	5/19	1/8 and 1/300	30	2.5	4	4

A third test was done on Dog 4 in which morphin alone was used and in which the dye appeared about as soon as when morphin and atropin combined were used. Dog 6 received $\frac{1}{300}$ grain (0.2 gm.) of atropin alone before ether was given, but this did not prevent the ether inhibition of function.

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[2] Thomas, B. A., and Birdsall, J. C.: Kidney Tests, J. A. M. A. **69**: 1747 (Nov. 24) 1917.

[3] Milliken, L. F., and Karr, W. G.: J. Urol. **13**: (Jan.) 1925.

It appears, therefore, that a sufficient dose of morphin and atropin, given thirty minutes before ether anesthesia, prevents the usual ether inhibition of kidney function in dogs, so far as this may be determined by the indigocarmin test. If the action of these drugs is similar in man, then we have a very positive indication for their use as an adjuvant to ether anesthesia, especially in urologic surgery.

Obviously, it is not often possible to conduct these experiments in the same way in surgical cases, but we do know that ether inhibits the elimination of indigocarmin in man in exactly the same way as it does in dogs. One patient who had normal elimination of the dye before operation was given indigocarmin intravenously after thirty minutes of ether anesthesia, and the dye did not appear until the ether was discontinued more than an hour later. It has also been noticed that when morphin and atropin are given preliminary to etherization for the purpose of cystoscopy, the dye given intravenously appears in normal time.

More detailed and accurate observation is necessary to substantiate the idea that these two drugs influence renal secretion the same way in man as in experimental animals; but if this theory is confirmed, then we have another indication for their employment when it is necessary to determine unilateral kidney function by cystoscopic observation in an anesthetized case.

In experimental animals, the use of morphin and atropin before ether anesthesia seems to influence kidney function temporarily in the same way as denervation of the kidneys. If this is true, we might reasonably expect these drugs to prevent reflex anuria following urologic operations, or at least that their use might lessen the incidence of this complication.

It is not within the scope of this paper to discuss the physiologic considerations which these experiments suggest, but it is believed that a correct interpretation of the facts produced will throw interesting sidelights on the physiology of urinary secretion.

CONCLUSIONS

1. Morphin and atropin, in the usual hypodermic dose, do not affect kidney function unfavorably.
2. Ether anesthesia inhibits kidney function in dogs, and morphin and atropin given prior to the anesthetic prevent this inhibition.
3. Clinical observation and experimentation indicate that morphin and atropin have the same effect on kidney function in man during ether anesthesia that they have in experimental animals.
4. Our experiments suggest definite indications for the use of morphin and atropin in urologic surgery in addition to those already recognized.
5. Further research and more definite clinical observation of the effect of morphin and atropin on kidney function are desirable.

Ramon Flocculation Test on Scarlet Fever Toxin and Antitoxin.—The Ramon flocculation test has been applied to the toxin and antitoxin of a hemolytic streptococcus of scarlatinal origin and has given a definite reading which checks on repeated tests. Comparison of results obtained by the flocculation method of titration and those obtained by skin tests are now being made.—Dyer, R. E.: *Pub. Health Rep.* 40:865 (May 1) 1925.

THE PRESENT STATUS OF HEXYLRESORCINOL AS AN INTERNAL URINARY DISINFECTANT [*]

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Chiefly as the result of the comprehensive researches of Dr. Edwin Davis,[1] in Dr. Hugh Young's urologic clinic at the Johns Hopkins Hospital, the chemical and biologic properties essential to an effective internal urinary antiseptic were known and clearly stated long before any substance possessing these properties had been described. According to Davis, the ideal internal urinary antiseptic should be: (1) chemically stable; (2) nontoxic; (3) nonirritating to the urinary tract; (4) antiseptic in high dilution in urine of any reaction, and (5) eliminated in high percentage by the kidney.

Having examined the possibilities in more than 400 compounds, many of which had been especially synthesized for the purpose of internal urinary antisepsis by Dr. E. C. White of Baltimore, Davis[2] felt justified, only four years ago, in stating that "there is no sound experimental or clinical proof of the fitness of any known drug for use as an internal urinary antiseptic."

The investigations that have led recently to the development of hexylresorcinol and its application as an internal urinary antiseptic were begun some twelve years ago. At that time one of us examined the lower homologues of this series of alkyl resorcinols[3] as to their biologic behavior, and found them not only to possess a very high degree of bactericidal power, but also to be relatively nontoxic substances. The examination of propylresorcinol, which appeared in the urine quite promptly after oral administration to rabbits, and a comparison of its biologic properties with those of resorcinol led to the hypothesis that alkylation of resorcinol not only increases its bactericidal power, but also decreases its toxicity, in direct proportion to the sum of the atomic weights of the atoms in the alkyl chain. Application of this idea, however, to practically every available phenolic nucleus other than resorcinol, with the object of developing a very powerful germicide of minimum toxicity, has led to indifferent or negative results.

In the resorcinol series, however, each increase in the weight of the alkyl chain was found to result in an astonishing development of bactericidal power with at least no apparent increase in toxicity when administered to rabbits by stomach tube. The peak of bactericidal power was reached in hexylresorcinol with a phenol coefficient variously estimated at from 46 to 56.3 by the United States Hygienic Laboratory method[4] now in use. Although hexylresorcinol is the most powerful phenolic germicide ever described,[5] daily administration by mouth of doses of 0.5 gm. to rabbits for twenty-one consecutive days, and single doses as large as 2.5 gm. (1 gm. per kilogram), resulted in no immediate or remote toxic effects that could be detected either by renal function tests, and urine and blood examinations during the period of observation, or later by microscopic examination of stained sections of all the more important organs. In fact, most of the animals saved for late observation, after prolonged courses of hexylresorcinol, showed remarkable gains in weight.

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[*] From the Department of Bacteriology of the School of Hygiene and Public Health, Johns Hopkins University.

[*] Read before the Section on Urology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[*] Because of lack of space, this article is abbreviated in THE JOURNAL by omission of tabulated case reports. The complete article appears in the Transactions of the Section and in the author's reprints.

[1] Davis, Edwin: Urinary Antisepsis, J. A. M. A. **70**: 581 (March) 1918. Davis, Edwin; and White, E. C.: J. Urol. **2**: 107 (April) 1918. Davis, Edwin; White, E. C., and Rosen, R.: Ibid. **2**: 277 (Aug.) 1918. Davis, Edwin: Ibid. **2**: 299 (Aug.) 1918; Am. J. M. Sc. **161**: 251 (Feb.) 1921. Davis, Edwin; and Beck, G. H.: J. Urol. **5**: 215 (March) 1921.

[2] Davis and Beck (Footnote 1, sixth reference).

[3] Johnson and Hodge: J. Am. Chem. Soc. **35**: 529, 1913. Johnson and Lane: Ibid. **43**: 348, 1921.

[4] Pub. Health Rep., July 8, 1921. McClintic: Bull 82, Hyg. Lab., U. S. P. H. S., April, 1912, p. 35.

The details of the experimental work with hexylresorcinol in the test tube, in rabbits and in normal men, have been published elsewhere[5] and will not be repeated. Suffice it to say that by a technic closely similar to that employed by Davis, oral administration of hexylresorcinol to normal men in repeated doses of 0.6 gm. was found to result in the secretion of a practically continuous flow of bactericidal urine, which in the test tube was found to be capable of destroying strains of *Bacillus coli*, as well as *Staphylococcus albus* and *aureus* isolated from cases of active pyelitis. In both rabbits and normal men, hexylresorcinol was found to answer Davis' qualifications for an internal urinary antiseptic in the following manner:

Hexylresorcinol was found to be: (1) chemically stable; (2) nontoxic in highly effective doses; (3) nonirritating to the urinary tract; (4) bactericidal (not merely antiseptic or bacteriostatic) in high dilution in urine of any reaction, and (5) eliminated in high percentage by the kidney, largely as an inert conjugate, but unchanged in sufficient amount to impart definite bactericidal properties to the urine. Hexylresorcinol is the only substance ever described as possessing these requirements.

Various methods of administration of hexylresorcinol have been carefully compared in the laboratory and in clinical use since the last published account of this work.[6] It has been found that the expectancy of bactericidal urine in normal men is definitely higher on equivalent doses of hexylresorcinol in solution in olive oil than with any other form investigated. If given immediately after meals or with a glass of rich milk, a 25 per cent. solution is well borne by all but very exceptional patients.

As a matter of convenience we have recommended that this solution be enclosed in a soluble gelatin capsule containing 0.15 gm. of the drug. For administration to infants and children, a 2.5 per cent. solution of hexylresorcinol in olive oil (1 dram [4 c.c.] contains 0.1 gm. of hexylresorcinol) has been found to be very satisfactory, and may be administered without any relation to meals.

MECHANISM OF THE INTERFERING ACTION OF SODIUM BICARBONATE

As previously pointed out,[5] the administration of soda to persons receiving hexylresorcinol completely robs the urine of its bactericidal properties, but for the reason that hexylresorcinol is just as active in alkaline as in acid urine, both in vitro and in vivo, this could not be due to the alkalinity of the urine per se.

The explanation of this puzzling situation has now been determined, and will be reported in detail elsewhere.[7] A brief account of the experimental proof will be given, however, for the reason that the results indicate the desirability of a change in certain routine procedures frequently instituted in the treatment of chronic infections of the urinary tract.

Billard[8] has shown that by lowering the surface tension of a solution of sugar, the rate of diffusion of water through the semipermeable membrane containing it is greatly increased. Since disinfection by direct chemical means must necessarily be preceded by the diffusion of the germicide through the cell membrane of the organism, it is reasonable to suppose that any factor controlling the rate or extent of that diffusion would equally control the rate or extent of the disinfection.

Applying this idea to disinfection in the test tube, we have shown that certain high dilutions of hexylresorcinol which are too weak to destroy the organisms exposed to their action become quickly effective when the surface tension of the solution is reduced by means of some substance that is entirely devoid of bactericidal action.

It is apparent, therefore, that a germicide which itself lowers the surface tension of its solutions possesses great advantages over one which does not.

Hexylresorcinol is a very powerful surface tension reducent. It seems highly probable that its remarkable bactericidal power is largely dependent on this physical property.

With these facts in mind it became highly desirable to determine the average surface tension of normal urine and then to study the effects of various drugs on it, especially hexylresorcinol and sodium bicarbonate.

For this purpose the surface tensiometer of du Noüy[9] was employed. The results were as follows:

The surface tension of normal urine is in the neighborhood of 60 dynes per centimeter.[10]

Administration of hexylresorcinol to normal men in therapeutic doses reduces the surface tension of the urine to the neighborhood of 50 dynes per centimeter.

Administration of sodium bicarbonate to normal men in therapeutic doses raises the surface tension of the urine to the neighborhood of 66 dynes per centimeter and above.

Merely by forcing water, the surface tension of the urine of a normal man may readily be raised by from 15 to 20 dynes per centimeter.

These figures are very significant. In the test tube, surface tension changes of this magnitude may be shown to control the bactericidal activity of a wide range of dilutions.

In the experiments on normal men receiving hexylresorcinol, the urine specimens showing a surface tension in the neighborhood of 50 dynes per centimeter or below were almost invariably bactericidal, even after titration to alkalinity, while those showing a surface tension around 66 dynes per centimeter or above, following the administration of soda or quantities of water, were almost invariably inert.

The direct bearing of these observations on the treatment of chronic infections of the urinary tract is obvious. While alkalization of the urine and "forced fluids" are of unquestioned value in the treatment of acute infections of the urinary tract, yet these measures alone are commonly observed to be of no avail in the chronic infections. In the latter, the use of active local and internal antiseptic therapy is generally considered to be essential. Yet forcing water, in addition to the antiseptic therapy, is almost a routine practice, while alkalization is frequently employed, as well. Both measures defeat the object of chemical disinfection of the urinary tract,[11] not only by diluting the antiseptic in the urine, but also by rendering even that dilution less efficient than it would be ordinarily, through the resulting rise in the surface tension of the urine.

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[5] Leonard, Veader: Secretion of Bactericidal Urine and Disinfection of Urinary Tract Following Oral Administration of Certain Alkyl Derivatives of Resorcinol, J. A. M. A. **83**: 2005 (Dec. 20) 1924; J. Urol. **12**: 585 (Dec.) 1924.

[6] Leonard (Footnote 5, second reference).

[7] Leonard and Frobisher: J. Urol., to be published.

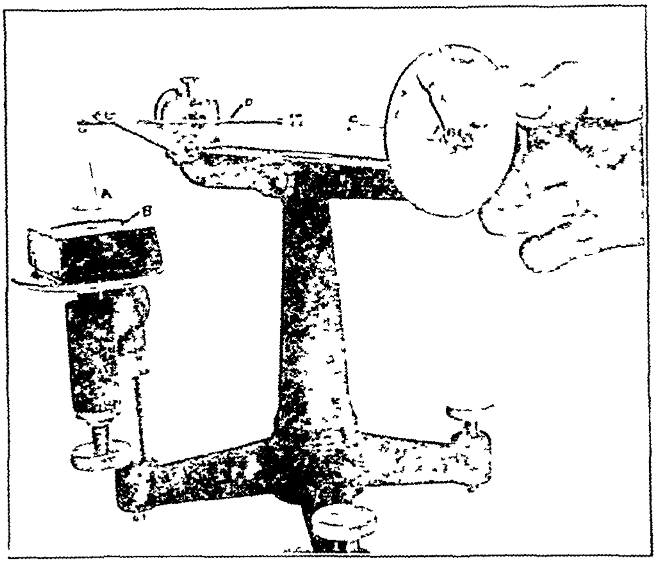
[8] Billard, G: Compt. rend. Soc. de biol. **60**: 1906.

[9] Du Nouy, P. L.: J. General Physiol. **1**: 521 (May) 1919.

[10] One dyne is equivalent to a lifting force of 1/981 gm. The surface tension of pure water is 77 dynes per centimeter.

Soda was known to be contraindicated in conjunction with hexylresorcinol treatment long before the explanation of its action was understood, but the importance of avoiding forced fluids became apparent only when the mechanism of the interfering action of soda had been determined.

In this connection it is interesting to note that, among the urologists who have been employing hexylresorcinol clinically for several months, the least enthusiastic reports seem to come chiefly from those who invariably instruct their patients to drink quantities of water.



The du Noüy surface tensiometer: The platinum loop (*A*) is brought in contact with the surface of the fluid (*B*) to be tested. The pull of the fluid surface is then measured by exerting a torsion on the fine steel wire (*C*) to which the loop is attached by means of the aluminum rod (*D*). The amount of torsion, or pull, is registered on the dial in angular degrees of torsion (<°t) and this reading is converted to dynes per centimeter by the use of a factor which varies with the individual tensiometer

CLINICAL RESULTS

Hexylresorcinol has now been administered in upward of 500 cases properly controlled by bacteriologic and urologic study. Three facts stand out in an analysis of this material.

1. Hexylresorcinol is nontoxic in therapeutic doses. The preliminary catharsis which frequently characterized the earlier forms of administration is a negligible factor with olive oil solutions in capsules as now employed. The dose should be given immediately after meals. Those who have reported gastric intolerance have been found almost invariably to have neglected this point. Children seem to tolerate relatively larger doses than adults. In the more massive doses (1 gm three or four times a day), which are probably never necessary, griping frequently results. An occasional patient will complain of griping sensations on small doses. This is usually only temporary, but may sometimes necessitate withdrawal of the drug.

2. Hexylresorcinol has not infrequently accomplished complete disinfection of the urinary tract in cases of long standing infections which have resisted all other measures.

3. Hexylresorcinol by mouth, without other treatment, has frequently resulted in the complete disappearance of all the commoner types of organisms found in urinary tract infections, as well as many of the rarer varieties.

Chronic B. Coli Infections (Adults).—Cases of this type which form the bulk of urologic infections may clear up completely in some instances with considerable rapidity under hexylresorcinol treatment (Table 1). Not infrequently the kidney pelves are completely disinfected while the bladder urine is still teeming with organisms (Table 2), and, under these circumstances, bladder irrigations may complete the disinfection very promptly. There is usually a very striking subsidence of local and constitutional symptoms, even though there may be no reduction in the number of organisms in the urine (Table 3).

Complete disinfection of the urinary tract in the *B. coli* infections ordinarily requires very persistent treatment, from sixty to ninety days, and the use of renal lavage and bladder irrigations in conjunction with the drug will increase the percentage of permanent cures and shorten the course of treatment.

It is commonly observed that the long standing *B. coli* infections associated with prostatitis are among the most resistant of these cases The infections which persist after removal of the prostate seem to be almost as difficult to cure. On the other hand, *B. coli* cystitis following prostatectomy ordinarily clears up promptly and satisfactorily under hexylresorcinol, provided there has not been a long standing infection previous to operation.

Forcing water, insufficient dosage and too short courses of the drug are the most frequent causes of disappointing results in the treatment of these cases with hexylresorcinol. As shown by Dr. R. B. Henline[12] in Dr. Oswald S. Lowsley's clinic at the New York Hospital, the percentage of cures in chronic *B. coli* infections of the urinary tract is very high if treatment with hexylresorcinol is persistent and accompanies the usual local measures.

Chronic B. Coli Pyelitis (Children).—As shown in Table 4, the chronic pyelitis of infancy and childhood may yield quite readily to hexylresorcinol. Symptomatic improvement is ordinarily very prompt and striking, and complete disinfection is obtainable in the majority of instances in a shorter time than in adults. Two cases cleared up in seven days.

In the very acute stages, hydrotherapy is necessary to check the violent febrile attacks, and under these circumstances, as in the acute pyelitis of pregnancy, forced fluids and alkalization give better results than any other form of treatment. Hexylresorcinol should be reserved for the subacute and chronic stages in this group of cases.

A 2.5 per cent. solution of hexylresorcinol in olive oil has been found to be a satisfactory form of administration to infants.

Staphylococcus Infections.—The most spectacular cures attributable to hexylresorcinol treatment are found in this group of chronic urinary tract infections (Tables 5 and 6). *Staphylococcus albus* and *aureus* have disappeared completely and permanently in some of these cases within forty-eight hours The average time necessary for complete disinfection appears to be in the neighborhood of three weeks. Prompt cure has followed the use of the drug in chronic pyelitis cases which have resisted hexamethylenamin by mouth and intravenously, gentian violet and repeated doses of mercurochrome-220 soluble intravenously, and renal lavage with silver nitrate and mercurochrome.

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[11] Acriflavine and proflavine require an alkaline reaction

[12] Henline, R B: Hexylresorcinol in the Treatment of Fifty Cases of Infection of the Urinary Tract, J. Urol 14:119 (Aug.) 1925.

Not infrequently small numbers of organisms may persist in the urine long after clinical cure is complete. This is especially common if there is a complicating prostatitis. Each case should be carefully checked by culture from time to time, and the drug continued until the urine has been sterile for at least two weeks

Other Coccus Infections—The few cases which have shown streptococci in pure culture in the urine (Table 7) have responded very promptly to hexylresorcinol treatment Prompt cure has also resulted in two cases of chronic pyelitis in which the infecting agent was found to be a gram-negative diplococcus which grew luxuriantly on ordinary culture mediums. Prompt cure followed the use of the drug in the one case of gonorrheal pyelitis and cystitis thus far recorded.

Fluorescent Organisms—Early in the clinical work with hexylresorcinol the rapid disappearance of *B. pyocyaneus* from mixed infections of the urinary tract was noted[13] Later, two very resistant cases of mixed infections with *B coli* were encountered in which *B. pyocyaneus* persisted uninfluenced by the drug, and remained in pure culture after *B. coli* had been completely eradicated One mixed infection, in which *B fluorescens-liquefaciens* persisted after all other organisms had disappeared, has been observed (B E. V., Table 3)

Miscellaneous Bacillary Infections—Two cases of chronic urinary tract infections showing *B proteus* in pure culture have been observed On hexylresorcinol one of these,[14] which had resisted pelvic lavage, etc, cleared up completely in four days The other cleared up in sixteen days. In one case of mixed infection with *B. coli, B proteus* disappeared on the thirteenth day.

One case of chronic pyelitis and cystitis due to *B subtilis,* which had resisted pelvic lavage, bladder irrigations, etc., was cured on the twenty-fourth day of hexylresorcinol treatment.[15]

Disinfection of Wounds Draining the Urinary Tract.—The observation has been made by Dr H. H. Young[16] and others that the virulent infections of prostatectomy wounds, recently reported by Shaw and Hill[17] as due to a gram-positive bacillus, hitherto undescribed, may clear up in a very striking manner when hexylresorcinol is given by mouth The results were not entirely conclusive, as local treatment was used as well

In this connection, the recent observations of D. C Elliott and H. G. Barbour are of interest They say:

> Two days prior to, and daily following urological operations, a series of twenty cases was given 0 9 gm of hexylresorcinol With urine draining through suprapubic and external urethrotomy wounds and soaking dressings, granulation tissue was healthy and normal, and though a few *B coli* were cultured from the urine, no further evidence of infection was observed Hexylresorcinol was easily detected in these urines . . . Suprapubic and other wounds from urological operations remain clean in spite of contaminated urine after prophylactic oral doses of hexylresorcinol.

Tuberculosis of the Urinary Tract.—Hexylresorcinol will clear up the secondary infection so frequently found in tuberculosis of the urinary tract with apparently the same degree of expectancy as in the nontuberculous urinary infections. There is this difference, however The secondary infection will recur sooner or later unless the patient continues to take the drug Doses of 0 45 gm thrice daily are ordinarily sufficient to prevent reinfection

No direct influence on the tuberculous process itself has been observed in these cases. Many of the patients gain weight while under treatment with hexylresorcinol, but the same is true of normal men

Miscellaneous Clinical Observations.—Powell[16] of Montreal has reported a case of persistent pyuria which had resisted treatment for years. Smears, cultures and guinea-pig inoculations of the urinary sediment were negative The urine cleared up with great rapidity under hexylresorcinol.

Furniss[18] of New York has observed some very prompt and striking effects from the use of hexylresorcinol by mouth in severe dysmenorrhea. In one severe case of long standing, in which the induction of an artificial menopause by radium had been decided on, prompt and complete relief followed the use of the drug It is highly probable that hexylresorcinol has an antispasmodic action, but this has not been investigated as yet

The possibilities of hexylresorcinol in the treatment of certain intestinal infections, including colitis, are being investigated, and will be reported in a future communication

Contraindications.—So far as is known, sodium bicarbonate is the only drug that is contraindicated in conjunction with hexylresorcinol treatment. This is not because of the alkalinity of the urine which results, but because soda raises the surface tension of the urine Forcing fluids has the same effect, and is therefore contraindicated as well.

So far as is known, nephritis is not a contraindication On the contrary, some nephritic patients seem to have been benefited by hexylresorcinol as evidenced by diminished albuminuria and pyuria and the disappearance of edema while under treatment with the drug

No irritant effect on the kidney can be demonstrated by daily administration of massive doses to rabbits for weeks at a time, or by repeated daily administration of therapeutic doses to normal men for months at a time Daily chemical and microscopic examination of the urine during the course of administration, and occasionally for six months thereafter, never revealed the slightest abnormality in any instance, while the phenolsulphonephthalein output remained unimpaired.

GENERAL CONCLUSION

Urinary infection is no more a clinical entity than hematuria or pyuria. It is merely a warning signal demanding thorough investigation by the trained urologist No internal urinary antiseptic, however ideal, can be used intelligently without a thorough knowledge of the underlying pathologic condition responsible for the urinary infection. A functioning kidney is the first necessity. Foci of infection, which may be a constant source of reinfection of the urinary tract, must be searched out and dealt with. Defective drainage at any point in the urinary canal must be corrected by appropriate measures, for even though it is possible to disinfect the urinary tract completely by means of hexylresorcinol in certain instances, even in the presence of these obstructions, to leave the patient with urinary stasis is to invite reinfection. The fact needs no emphasis, however, that after removal of all discoverable foci and after full correction of all defects in urinary drainage, a large proportion of chronic urinary infections persist in spite of the most thorough application of all of the measures heretofore at our command. On the basis of our clinical experiences with hexylresorcinol during the last eighteen months, it seems reasonable to expect that this drug will find its greatest field of usefulness in this group, regardless of the infecting agent.

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[13] Leonard (Footnote 5 first reference)

[14] McCurry, W E Hexylresorcinol in Bacillus Proteus Pyelitis, abstr J A M A **84:** 1950 (June 20) 1925

[15] Jacobs L K Personal communication to the authors

[16] Personal communication to the authors

l, J H J Urol **13:** 689 (June) 1925

[18] Furniss, H D, in discussion on Henline, R B Hexylresorcinol in the Treatment of Fifty Cases of Infection of the Urinary Tract, New York Academy of Medicine, April 22, 1925

Even with these considerations in mind, the best results will follow only the strict observance of four controlling factors in the use of hexylresorcinol, all of which bear a close relationship to considerations of surface tension:

1. The dosage must be adequate. On less than from 0.45 to 0.6 gm. three times a day (from three to four capsules immediately after each meal), the surface tension of the urine will not be lowered sufficiently to obtain the maximum disinfectant action.
2. Fluids must not be forced. This procedure raises the surface tension of the urine, and thereby robs it of its bactericidal action. In many instances, quantities of water may be a prime necessity. Under these circumstances it is just as well to postpone active antiseptic therapy until the amount of fluid ingested can be safely reduced.
3. Sodium bicarbonate is contraindicated for the reason that it raises the surface tension of the urine, and, like large quantities of water, thereby robs the urine of its bactericidal properties. Hexylresorcinol is equally efficacious in alkaline and in acid urine.
4. The course of treatment with hexylresorcinol must be sufficiently prolonged. Among the organisms commonly found in urinary tract infections, those which are most resistant to surface tension changes in the test tube (colon group) are most resistant to the action of hexylresorcinol in vivo. Urinary infections by *B. coli* and related types ordinarily require from sixty to ninety days' continuous treatment with the drug. If combined with the usual local measures, the course of treatment will be shortened and the percentage of ultimate cures increased.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. HAINES AND MILLIKEN, AND LEONARD AND WOOD

Dr. O. S. Lowsley, New York: Dr. Haines brought up a really important problem as to dispelling some of the ideas we have inherited and have accepted without getting proper knowledge. It is interesting to know that morphin does not diminish the activity of the kidney, but increases it. That is very important in surgery. There is one thing that morphin does which is harmful: it causes a stasis of the intestinal tract. If some way could be found to relieve this, it would be a still more valuable drug than it now is. I should like to ask Dr. Haines whether the kidney catches up on its function after having been out of commission for thirty minutes. Is the function of the kidney without the ingestion of morphin the same at the end of two hours as it is with the morphin? Regarding hexylresorcinol: We were fortunate in being placed on Dr. Leonard's list of fifteen to receive that drug, and the result has been really spectacular. He was anxious to have every case a proved case, and we went further. Every patient had been treated with various other things. One had been treated for eighteen months, not constantly, but the disease was present at all times, and he often had exacerbations of acute pyelitis. In none of these cases have we failed to get a clinical cure. Dr. Henline of our staff will report those in which we have failed to get a bacteriologic cure. I remember one man who had three organisms in the kidney, *Staphylococcus aureus*, the colon bacillus and a color bacterium. He was having chills and fever two and three days a week. We did not wish to take his kidney out, as it functioned. We treated him by various methods to reduce the infection until he was able to continue his work, but he had occasional chills, and we made no impression whatever on the bacteriology of the urine. Three days after the hexylresorcinol was administered, *Staphylococcus aureus* was gone; the colon bacillus was gone in sixty days, and while he still has the color bacilli we do not worry about that. There is a slight amount of pus which is determined by the microscope, but there is no macroscopic pus. This drug, in spite of the embarrassing publicity it has had, is very valuable and unquestionably in our experience is far superior to any of the drugs we have ever used up to this time.

Dr. R. B. Henline, New York: In our series of more than fifty-six cases of infection of the urinary tract, each patient had been subjected to a rigid physical examination, and all foci of infection had been removed. A complete cystoscopic examination was done in each case, including the taking of cultures from the bladder and each kidney, urea and microscopic examination of the urine from each kidney, an intravenous administration of phenolsulphonephthalein with the appearance time and quantitative estimation of the output from each kidney to determine the function, and plain roentgenograms and pyelograms in the dorsal and sitting posture. Each patient received an average of 0.45 gm. of hexylresorcinol three times daily, combined with ureteral dilations and kidney pelvic lavage at intervals of from one to four weeks. Seven patients noticed some gastric disturbance, but when the dose was given on a full stomach, all were able to tolerate it. No alarming symptoms were noted. Of twenty-six cases of colon bacillus infection, the average duration of the disease was 3.67 years. Fifty per cent. had some urinary complication. All these patients had been under treatment for an average of six months, receiving dilations of the ureter and kidney pelvic lavage with 1:1,000 neutral acriflavine. After hexylresorcinol, all the cultures of the urine, except two, became sterile in an average of 63.5 days. One of these patients showed sterile kidney specimens but failed to return for further treatment. The other has sterile kidney specimens but still has some infection of the bladder due to a coexisting bladder tumor. Of the twelve cases of other infections of the kidney and bladder, the average duration was two and one-half years. Seventy-five per cent. had some complications. After hexylresorcinol was begun, an average of 50.7 days was required to obtain sterile specimens from eleven cases. The remaining patient showed three organisms continually present in all specimens, two of them having disappeared leaving an encapsulated *Bacillus fluorescens*. He was clinically cured. Another patient had bilateral kidney stones. One stone was removed, and both kidney and bladder urines were sterilized, with the other stone remaining in the kidney pelvis. Of the fifteen cases of gonorrhea studied, none showed any improvement that could be attributed to the use of hexylresorcinol. Thus, our experience shows that hexylresorcinol, combined with the usual treatment, is of distinct aid in the treatment of urinary tract infections. In closing, I wish to stress the necessity of a thorough urologic examination and the removal of all pathologic conditions from the urinary tract.

Dr. Vincent J. O'Conor, Chicago: In regard to the effect of morphin on kidney function: Several years ago I was asked to study the effect of morphin and scopolamin anesthesia on renal function. The results we obtained in twenty-five cases, very carefully checked with normal urinary function obtained by both the color and quantitative tests, showed that one-half grain (0.032 gm.) of morphin and 1/150 grain (0.0004 gm.) of scopolamin gave absolutely no change in the divided urine excretion as obtained by ureteral catheterization. This was irrespective of the amount of fluid given either before or during the tests. Studying cases in which one-fourth grain (0.016 gm.) of morphin and 1/100 or 1/50 grain (0.0006 or 0.001 gm.) of scopolamin was administered, followed an hour later by more morphin and scopolamin, showed a decreased appearance of the dye, and it appeared at first as though the function would be decreased; but when tests were taken over a period of two hours the total output during that time gave practically normal results. The patients who received three injections of morphin, one-fourth, one-sixth and one-sixth grain (0.016, 0.010 and 0.010 gm.), respectively, get different results. We studied ten of these cases and in every one there was decrease in the appearance of the dye and slight diminution in the function. This was shown to be due to the lack of fluid absorption during that time, because when fluid was given by rectum or subcutaneously the urinary excretion was normal. When glucose is given intravenously, there is a slight augmentation of normal function even when very large doses of morphin and scopolamin are given. It seemed from these observations that morphin had no direct action on kidney function, but that in large doses it hindered the absorption of fluids from the bowel, etc., and that this could be counterbalanced entirely by the administration of fluids.

Dr. B. A. Thomas, Philadelphia: I was very much interested in the report of Dr. Haines and Dr. Milliken with respect to the injection of morphin and atropin in conjunction with ether anesthesia, chiefly because about fifteen or eighteen years ago, in a small series of cases in which cystoscopy was performed and indigocarmin was used following morphin alone, we found that the dye was delayed in its elimination about four minutes, using the average injection of one-quarter grain (0.016 gm.) of morphin. In another small series in which cystoscopy was done before and after taking ether, making the comparison under the same circumstances, we found that following ether there was a delay in the elimination of indigocarmin of from five to ten minutes, depending on the duration of the anesthesia. Therefore, I feel that this work of Dr. Haines and Dr. Milliken possesses real value, because in those patients in whom the hypodermic prior to operation enjoys indisputable merit, fear for the inhibition of kidney function need be entertained no longer, since the addition of atropin to the morphin enhances rather than inhibits renal activity. Dr. Leonard is to be congratulated for the great amount of painstaking work he has done in connection with hexylresorcinol. I have been disappointed in its use in about twenty cases. The cases consisted of both unilateral and bilateral pyelitis, in which, in addition to colon bacilli, *B. proteus-vulgaris*, streptococci, staphylococci, and the bacillus of Friedländer were present. The work was done by Dr. John A. Kolmer in the Department of Bacteriology of the Graduate School of Medicine of the University of Pennsylvania. The results were not any more definite than we would expect to get from any urinary antiseptic. It is true that we did not carry out the treatment with the drug in these cases for the length of time I understand is necessary; that is, two or three months or more. Moreover, we gave the patients all the water they wanted. I understand that this should not have been done and that it interfered with the action of the drug. Perhaps we did not carry out the administration of hexylresorcinol satisfactorily, but we did it the best we knew how, according to the directions we had, and I feel that I would not dispense with the benefit of water in pyelitis for the sake of the medicinal action of hexylresorcinol. In our experience. about 50 per cent. of the patients could not tolerate the drug even in one-half the specified dosage.

Dr. Clyde W. Collings, New York: Dr. Lowsley and Dr. Henline report approximately 100 per cent. cures, which seems almost too good. I wish Dr. Leonard would place Bellevue on his approved list for free hexylresorcinol.

Dr. C. E. Buford, St. Louis: I have no detailed report for I have used hexylresorcinol in what I fear has been a rather unscientific way in about thirty cases. I am sure we made a mistake in that we did not limit the intake of fluids. Of the thirty patients, we felt that two were much improved. In two cases, hematuria was produced. Those patients were given two capsules, three times a day. In about six cases there was some complaint about the stomach not tolerating the drug, and the patients complained of belching, indigestion and so forth, but the work was not carried out with enough precision to count for much. I should like to know more about the instructions for giving it, for I am anxious to try it again and have our cases examined more carefully.

Dr. Alexander H. Peacock, Seattle: We have tried hexylresorcinol in a limited number of cases, but there are certain things against it: its cost and the long period of time over which it must be taken makes it prohibitive for many patients. The druggists have got hold of it, advertise it as a very efficient remedy and get exorbitant prices for it. In the very limited way in which we have used it, I do not think we have had any better results than from other urinary antiseptics, and it does cause irritation in a large percentage of the cases.

Dr. Daniel E. Shea, Hartford, Conn.: One of my greatest objections to hexylresorcinol is its cost. Many of our clinic patients cannot afford it at its present price. I cannot say that I have seen any remarkable results after its use. One patient developed a severe hematuria after its use, while another patient complained of severe gastro-intestinal disturbances. I, also, have been prescribing plenty of fluids. If fluids are contraindicated while taking hexylresorcinol, I shall eliminate the drug and give the fluids. I feel that they are very necessary in the treatment of urologic conditions.

Dr. Leon Herman, Philadelphia: In Dr. Leonard's original paper on hexylresorcinol, it is stated very definitely that the drug has proved most useful in the treatment of superficial infections of the urinary tract. In fact, attention is drawn to its inability to influence infections within the renal parenchyma, the prostate gland and other structures far removed from the lining mucosa of the urinary passages. If we eliminate this type of case, there are comparatively few cases in which hexylresorcinol would be of service, for uncomplicated surface infections of the mucous membrane are relatively uncommon. Many of the cases reported by Drs. Lowsley and Henline were instances of what in all probability were deep seated infections; notwithstanding this fact, the infection disappeared more or less promptly under treatment with hexylresorcinol. This is in direct contradiction to Dr. Leonard's original conception of the action of the drug. It is difficult to understand how one could eliminate infection from a kidney filled with stones; certainly it could not be accomplished by any means other than hexylresorcinol Dr. Lowsley has shown several instances of this kind, and the conclusion would seem to be inevitable that hexylresorcinol will cure not only superficial infections but deep seated ones as well.

Dr. Lionel P. Player, San Francisco: I have used hexylresorcinol to a very limited extent. I did not use it according to the dictates of Dr. Leonard. We forced fluids as usual, and I feel that that had something to do with our failure to get results. When I get back I will try hexylresorcinol again. I should like to ask Dr. Leonard how long it is safe to give such a urinary antiseptic.

Dr. Israel Kleiner, New Haven, Conn.: My results with hexylresorcinol were about the same as those reported by Dr. Thomas. In no case did I see a favorable result. In all fairness to Dr. Leonard I want to say that in all the cases fluids were pushed while hexylresorcinol was being given. In our part of the country, the demand for the drug has been so great that the wholesale druggists cannot supply it. The patients taking it now are of necessity only getting it intermittently, although some are stocking up before starting the treatment.

Dr. George Gilbert Smith, Boston: I have used hexylresorcinol in about a dozen cases. Like some of the speakers, I feel that I have not followed instructions accurately, for I have not limited the intake of water. I have given the drug to some patients for two or three months, two capsules, three times a day, but this has not succeeded in clearing up the entire urinary infection. I think Dr. Herman hit the nail on the head when he said that there are very few infections of the urinary tract that are confined to the mucous membrane, and it seems to me that when the infection is beneath the mucous membrane or in the prostate it is asking too much of any antiseptic to expect it thoroughly to sterilize the urinary tract. I think in those cases we must use desquamating doses of silver nitrate, or treat the prostate by massage, and get the infection out in that way. Dr. Leonard has done a great work in getting at the fundamental chemistry of urinary antisepsis, and I feel that on the basis of what he has discovered we are likely to get much better results than we have heretofore.

Dr. O. S. Lowsley, New York: It might be worth while to explain that our bacteriology was all done by the bacteriologic department of the hospital, which is presided over by Dr. William Elser, professor of bacteriology at Cornell University. We place absolute confidence in the results. We have nothing to do with the examination, except to send the specimens. About the complications, we have eliminated them, even to the extent of taking out one bad kidney, and in case a patient has prostatitis, we treat the prostatitis in the usual way. We have also tried to eliminate all foci of infection in the teeth, tonsils and so on, realizing at the same time, and not mixing up the results, that after the elimination of bad teeth and bad tonsils, kidney infection will sometimes clear up by itself. Kidney bleeding will clear up after the elimination of the infection. The drug was recommended by one in whom we had the utmost confidence. Our results have been spectacular. We have tried to follow out his precepts to the letter, without any deviation. We have had patients with gastro-intestinal irritation and have taken those patients off the drug for a week, and then started again and have had no trouble after starting it the second time.

Dr. Leon Herman, Philadelphia: It was far from my intention to question the results of Dr. Lowsley's work; these I accept as evidence that hexylresorcinol will accomplish far more than was claimed for it originally. Dr. Leonard has said repeatedly that this drug is not an "intrarenal" antiseptic; that it has little, if any, effect on deep seated infections of the urinary tract. It would seem from the results reported by Dr. Lowsley that Dr. Leonard was too modest in his claims for the antiseptic value of the drug. I should like to know if his original views have been modified as a result of the report submitted by Dr. Lowsley.

Dr. L. F. Milliken, Philadelphia: This work was by no means exhaustive, and while morphin and atropin combined seem to accelerate kidney function slightly, we do not advise their use as diuretics. We tried to determine in the first series of tests whether these drugs delay kidney function, as many believe that they do. There is one feature in connection with the tests to which I wish to call your attention. There was very little difference in the kidney function in the tests done with morphin and atropin and in those in which these drugs were not employed as determined by the appearance time of the dye and the total percentage eliminated, but according to the index of elimination, the excretion of dye was considerably accelerated after their administration. We did not recover a larger quantity of dye after the use of these drugs, but the kidneys did excrete it more promptly. Answering Dr. Lowsley's question about the kidneys catching up in their function: Ether inhibition of dye excretion is evident only when the animal is kept well under the anesthetic. If it is allowed to come out to the point of struggling, the dye almost immediately appears in the urine. In one case the dye appeared in twenty minutes during the first test. The anesthetic was neglected in this case, and when the dog began to struggle feebly the dye immediately appeared. No dye is excreted as long as the anesthetic is continued. In one hospital case, the anesthetic was continued for more than one hour after the dye was injected, and no dye appeared in the urine until eight minutes after the ether was withdrawn. In the dogs, function, as determined by the appearance time of the dye in the urine, was restored anywhere from six to twenty-two minutes after the ether was stopped. We had learned in some previous experiments that denervation of the kidneys prevented ether inhibition of function, and we began the second series of experiments to determine whether any drug would give similar results. We believe that we have in morphin and atropin drugs that do this.

Dr. Veader Leonard, Baltimore: Recently Dr. Chute emphasized the point that it is better to have a live patient than one with a sterile urinary tract, and that water and lots of it is frequently a prime necessity. It is better to postpone the use of hexylresorcinol or any active antiseptic therapy until the necessity of forcing water no longer exists. Gastric irritation will seldom be experienced if hexylresorcinol is taken only immediately after meals. Rarely will a patient be found who cannot tolerate it. I have not personally observed hematuria. The drug has now been given to thousands of patients, and I am not prepared to admit that it was responsible in the two cases mentioned. Cause and effect have not been proved. Hematuria has not occurred in hundreds of observations on animals and normal men. Until very recently it seemed that hexylresorcinol would never be more than a laboratory curiosity because of its expense. It is bound to be expensive, at least until a new synthesis is devised which employs cheaper materials. Unfortunately, my limited supply has not been sufficient to meet the demands made on it. Hexylresorcinol is not contraindicated in pyelonephritis. We cannot expect prompt disinfection if the renal parenchyma is extensively involved, but in my experience these cases rarely fail to derive some benefit if treatment is persistent. Again, hexylresorcinol is not contraindicated in prostatitis, but no urinary antiseptic could possibly be expected to influence infection so located as to preclude intimate contact with the urine. Except in cases in which infection is confined to the mucosal surfaces, those who expect spectacular results without due regard to proper drainage and foci of infection will be disappointed. Not only must the drug be given in sufficient dosage and with avoidance of large quantities of fluid, but each case must receive the benefit of suitable treatment based on accurate urologic diagnosis.

PELLAGRA ASSOCIATED WITH ANNULAR CARCINOMA OF THE TERMINAL PORTION OF THE ILEUM *

FRANKLIN R. NUZUM, M.D.
SANTA BARBARA, CALIF.

W. L. Bender has recently recorded three instances of carcinoma of the stomach associated with pellagra.[1] He could find in the literature only two similar reports. One, by Rolph,[2] recorded a woman with a skin eruption, glossitis, pharyngitis and mental symptoms considered typical of pellagra, coming on four months before death. At death, a carcinoma of the stomach was found. The carcinoma was located in the cardia and mechanically interfered with the passage of food into the stomach. The second, by Bryan,[3] concerned a patient with symptoms of peptic ulcer for twenty years who developed a dermatitis and stomatitis typical of pellagra. This patient had a carcinoma of the stomach, which was resected, and in two months the skin lesions had completely disappeared.

Three instances of acute pellagra following operations for suspected gastric ulcer are cited by Graves.[4]

Bender reports three instances. In one, a patient with a benign ulcer of the stomach developed pellagra during the period of jejunal feeding. The pellagra disappeared after the patient was placed on a general diet following gastro-enterostomy. The second patient had pellagra secondary to carcinoma of the stomach with pyloric obstruction. Some improvement followed gastro-enterostomy, but the patient died later. The third patient had pellagra associated with carcinoma of the stomach. Death followed operation in this instance. In each of these three instances, pellagra developed after the stomach lesion had caused obstruction to the passage of food.

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* From the laboratories of the Santa Barbara Cottage Hospital.

[1] Bender, W. L.: Pellagra Secondary to Lesions of the Stomach Interfering with Nutrition, J. A. M. A. **84**: 1250 (April 25) 1925.

[2] Rolph, F. W.: Cancer of the Stomach and Pellagra in the Same Patient, Canadian M. J. **6**: 323, 1919.

[3] Bryan, R. C.: Cancer of the Stomach Associated with Pellagra, Virginia M. Month. **46**: 107 (Aug.) 1919.

[4] Graves, M. L., in discussion on Roberts, S. R.: Types and Treatment of Pellagra, J. A. M. A. **75**: 21 (July 3) 1920.

I have observed two instances which are closely related to this subject. In each patient, well defined skin lesions were present, and a diagnosis of pellagra had been made by dermatologists. At death in each instance an annular carcinoma of the terminal portion of the ileum was found.

Case 1.—*History.*—H. S., a white American, aged 58, entered the Santa Barbara Cottage Hospital in the service of Dr. H. O. Koefod, Sept. 7, 1922, complaining of weakness, anorexia, and of an eruption on his hands. He had had typhoid and pneumonia at 13 years of age, malaria at 48, and influenza at 53. He had lived in California all his life.

The present illness started seven months before admission to the hospital, when his nose began to bleed and small pimples were noted to form on the inside. Fainting spells began at this time, especially after exertion, together with shortness of breath, some cough and an expectoration which at times was bloody. Four months previous to admission, the patient noticed an eruption on the back of both hands. The appetite remained good until three weeks before admission. The bowels had been costive for many months and had required a daily dose of magnesium sulphate to obtain a movement.

Examination revealed a sharply demarcated dark red eruption on the back of each hand. Scattered over this area were thin, whitish scales. A similar eruption was found in a sharply demarcated area over the sacrum. On the anterior surface of each leg, there was a pigmented eruption similar in color to that on the hands. General nutrition was poor. The abdomen was distended. Purpuric spots appeared over both lower extremities. The patient was unable to eat, weakness increased rapidly, and he died twelve days after admission.

The laboratory data included a negative blood Wassermann test. Albumin and casts were present in the urine. Blood examination showed: hemoglobin, 30 per cent.; red blood cells, 2,000,000; white cells, 10,700; color index, 0.75; small lymphocytes, 30 per cent.; large lymphocytes, 7 per cent.; transitional cells, 2 per cent.; polymorphonuclear leukocytes, 59 per cent.; basophils, 2 per cent. The stools were repeatedly positive for chemical blood.

Necropsy.—There was a definite hard mass in the region of the ileocecal valve. There was a marked dilatation of the terminal portion of the ileum with a marked retention of fecal matter. The mass in this region was an annular carcinoma appearing in the last 10 cm. of the ileum and not involving the cecum Metastatses were present in the left lung, the hilum of the left lung, the liver and the spleen. The patient died of terminal bilateral bronchopneumonia. On section, the tumor of the bowel was found to be an adenocarcinoma.

Case 2.—*History.*—A German, aged 68, whose family history was negative, had had measles, typhoid and malaria as a young man. He had had gonorrhea on three different occasions. He had been a laborer in mines for many years, but during the latter part of his life had been a tramp.

He entered the Santa Barbara General Hospital, May 1, 1923. He complained of a diarrhea of two months' duration, marked and rapid loss of weight, burning in the bowels, swollen tongue, cough, thirst, weakness and an eruption on the backs of both hands. This eruption had been present for two months.

The urine was normal. Blood examination revealed: hemoglobin, 90 per cent.; white blood cells, 4,200, of which 65 per cent. were polymorphonuclear leukocytes; small lymphocytes, 19 per cent.; large lymphocytes, 8 per cent.; transitionals, 1 per cent. The stools gave a positive chemical test for blood. The temperature was normal up to the last two days of the patient's illness. Death occurred seventeen days after admission.

The patient was emaciated and irrational. The mucous membrane of the mouth was red and edematous, and small ulcers were present. The tongue was swollen. The abdomen was distended. No masses or points of tenderness were found. Involving the back of each hand was a sharply demarcated area of dermatitis. The skin in the involved area was thickened and dull red. In the centers of these erythematous areas, desquamation was occurring. The scales were white and small.

Necropsy.—A tumor was found in the terminal portion of the ileum. There was marked distention of the bowel proximal to the tumor. The tumor was found to be an annular carcinoma involving the last 6 cm. of the ileum, but not extending into the cecum. Section revealed this tumor to be an adenocarcinoma. No metastases were found.

COMMENT

The occurrence of lesions characteristic of pellagra associated with carcinoma of the small bowel has not been recorded, so far as I can determine. The suggestion of Bender that the disturbance of nutrition as a result of the mechanical obstruction caused by the carcinoma seems applicable to these two instances. The etiology of pellagra is still in doubt, one view contending that it is infectious and the other that it is a dietary deficiency lying in the protein content of the diet, as advocated by Goldberger.[5] Experimental data and results of treatment of pellagra patients make the dietetic theory the most plausible. These added instances of disturbance in nutrition as the result of mechanical obstruction of the small bowel give added weight to the dietetic origin of this disease.

Third Avenue and Bath Street.

OBSTETRIC PARALYSIS

REPORT OF ELEVEN HUNDRED CASES *

JAMES WARREN SEVER, M.D.
BOSTON

The careful observation and stewardship of any large number of cases implies a certain responsibility to one's fellow workers. A report should be made of this stewardship so that they may profit by such an experience. I am therefore presenting a brief report of 1,100 cases of obstetric paralysis, in a large number of which I have been able to obtain fairly accurate data. These data will be presented because, by its numbers alone, it is the largest series of such cases ever recorded, and so far as that fact goes, must have a certain fundamental statistical value in establishing facts about this condition of obstetric paralysis.

The accompanying table shows in detail certain data in regard to these cases.

These figures alone, however, will not give one a complete picture of obstetric paralysis, as they record only the conditions occurring at birth, and serve only to suggest etiologic factors.

An analysis of the figures may be of interest. In the first place, there is no reason to expect any difference in regard to the sex.

The right arm was affected 670 times and the left, 430, or about 64 per cent. in favor of the right arm. This is about the usual percentage in other series reported.

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[5] Goldberger, Joseph: The Relation of Diet to Pellagra, J. A. M. A. 78: 167 (June 3) 1922.

* From the neurologic and orthopedic clinics of the Children's Hospital.

* Read before the Section on Orthopedic Surgery at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

The types of paralysis differed, the most usual one being the so-called upper arm type, of which 829 cases were recorded, as against the so-called lower arm or, a better name, the whole arm type, in which besides the fifth and sixth cervical roots being injured, the seventh and eighth and first dorsal roots were injured. Of this type, 208 cases were recorded. In sixty-three cases both arms were affected, the whole arm type being the least common. It is generally acknowledged that a difficult and prolonged labor is a predisposing factor of the greatest importance in the causation of this type of paralysis. In this series, 584 cases were definitely recorded as long and difficult. In a large proportion of these cases, forceps were used, either high or low; most of the mothers had ether, which presupposes a relaxed and asphyxiated child. All these factors contribute toward establishing the ideal conditions for the production of such a paralysis.

All the conditions noted imply the application of force combined with great muscular relaxation of the child, conditions peculiarly favorable for the production of such an injury. A moderate number apparently had normal labor; that is, no forceps were used and no undue force was exerted. Others reported that the head was delivered naturally, but the shoulder stuck behind the pubes and at that time force was applied.

Obstetric Paralysis in Eleven Hundred Cases

Boys	551
Girls	549
Right arm affected	670
Left arm affected	430
Both arms affected, upper arm type	35
Both arms affected, whole arm type	22
Both arms affected, type not recorded	6
Upper arm type	829
Whole arm type	208
Difficult labor	584
Ether used	502
Normal labor	57
Head presentation, including face	443
Breech presentation, including foot and version	142
Presentation not known	458

In regard to the presentation, we have recorded 443 head or face presentations and 142 breech. The latter class includes versions and footlings. In 458 cases, the presentation could not be determined, but a large majority of these were undoubtedly vertex. The latter figures on the presentation are of interest as showing the much greater frequency of vertex presentations in relation to both types of paralysis. It has been supposed that breech presentations were the usual cause of the whole arm type of paralysis, but these figures refute such a theory. Also, it has been stated that paralysis occurred equally in head or breech presentations; but this is not so. Head presentations combined with a stuck shoulder, and the application of force at that time, resulting in a forcible separation of the head and shoulder, will injure the plexus to any degree, thus producing an upper or whole arm type of paralysis. There is, of course, an undue predominance of primiparas in this series. It must be granted that first babies make a harder entrance into this world than those that follow, and the paralytic conditions seem to exist more with them than with the later children, although these are not by any means exempt. There have been a noticeable number of babies that apparently showed a simple upper or whole arm paralysis at first, but a more careful examination showed various associated conditions due to cord injury. These cord injuries practically always follow breech extraction and are caused by traction and lateral flexion of the trunk They show conditions from paralysis of both arms, partial or complete, due to injury to the plexus, to section of the cord and paraplegia below the point of injury. Many patients show a moderate degree of spasticity of the legs with adductor spasm suggesting a cortical lesion as well. They are of sufficient frequency not to be overlooked.

PATHOLOGY

There are generally two well recognized types of paralysis seen. The more common, the upper arm type, consists of a lesion that involves the fifth and sixth cervical roots and the suprascapular nerve and produces a paralysis of the muscles of the upper arm only, with the exception of the supinators. The less usual type, the so-called lower arm, or whole arm type, is the result of injury not only to the fifth and sixth cervical roots, but to the seventh and eighth, and possibly the first thoracic as well. Here the whole arm is flaccid; there is a wrist-drop and paralysis of the small muscles of the hand There occasionally occurs the pure lower arm type of paralysis without any involvement of the upper cords of the plexus, the so-called Klumpke's paralysis. These cases show a paralysis, usually the result of stretching of the plexus from overextension of the arm in cases of face presentation, and due to injury to the lower cords of the plexus; namely, the seventh and eighth cervical and first dorsal roots. They may at times be bilateral. It is in this type that one often sees inequality of the pupils, owing to the fact that the sympathetic fibers from the deep cervical ganglionic plexus enter the spinal cord through the first dorsal and, at times, through the eighth cervical roots. Injury, therefore, to these roots leads to an unopposed action of the motor occuli nerve.

Pathologically, in the milder cases, the stretching or tearing forces result in a greater or less degree of hemorrhage or edema into the nerve sheaths In others, there may be a rupture of the perineural sheath, accompanied by hemorrhage into the substance of the nerve trunk, associated with a tearing apart or separation of the nerve fibers The latter condition leads, of course, to permanently impaired function and to the formation of scar tissue in the nerve track. In the more severe cases of the upper arm type, there is a partial or complete division of the fifth and sixth cervical roots, which leads to a more permanent form of paralysis than usual, and the formation of a more extensive area of scar tissue.

The force producing these lesions is variable, and so the lesions are variable. The nerve roots are often frayed out inside the sheath instead of being torn across evenly, and in this way the lesion may be incomplete at any given cross section of a nerve, but involves different fibers at different levels This scar tissue contracts in time, and not only effectually prevents the regeneration of the nerves, but, by its contraction, may press on and destroy the few fibers that may have escaped the original injury

The other type, known as the lower arm or whole arm type, is the result of either a lesion involving all the nerves of the plexus, or, in the distinctly lower arm type in which the lower arm and hand alone are involved, of the so-called Klumpke's paralysis, in which the lesion probably involves the eighth cervical and first dorsal roots alone. This type generally results from traction applied in a breech case with the arm extended, or to traction in the axilla in a vertex presentation. Pathologically, the conditions are similto those seen in the other types, depending on the severity of the injury. No case in which operation has been performed has failed to show a definite pathologic lesion of the brachial plexus, definitely corresponding to the muscles involved.

ROENTGEN-RAY FINDINGS

A great number of these patients have been roentgenographed at all ages; that is, the ages of the patients varied from 2 days to 18 or 20 years. The findings have been rather characteristic. In the early stages there has been practically nothing shown in the roentgenogram except an occasional fracture, either of the clavicle or of the humerus. We have been unable to demonstrate any epiphyseal separations or dislocations. As time goes on, the roentgenograms show rather characteristic changes; that is, the shaft of the humerus is a little smaller and the epiphyseal head of the humerus is a little smaller than the one on the well side. The glenoid fossa becomes flattened, particularly in the older babies, when there is a posterior subluxation. In these older babies, associated with the posterior subluxation, there is seen a hooking of the acromion, more or less marked and depending somewhat in its extent on the degree of subluxation.

There is also seen a marked elongation of the coracoid process, due probably to the pull of the contracted coracobrachialis muscle. The scapula is always seen rotated to a certain extent towards the axilla, as well as elevated so that the superior vertebral angle is presented frequently well above the line of the clavicle. One must be on one's guard in certain of these cases to differentiate the condition from Sprengle's deformity or a congenital elevation of the scapula. In regard to the elbow, the roentgenographic findings are of interest. In certain cases, which so far we cannot classify correctly, there appears a subluxation or dislocation of the head of the radius, which extends in some instances well up in front of the lower end of the humerus, and not only blocks flexion but limits supination and pronation.

CLINICAL FINDINGS

Clinically, there is nothing new of any particular importance in regard to these cases. They present practically the usual conditions and run fairly true to type. We have, however, not been sticking quite as closely to our hard and fast line of upper arm and whole arm classification, although this is a fair method, but we find that many cases show certain clinical symptoms of the two types. A certain proportion of young babies are presented to the clinic with what apparently is only the upper arm type of paralysis, but there is also a wrist drop present which ordinarily we have associated with the whole arm type. We have learned to discriminate about this wrist drop in that we are not willing to make any definite statement in regard to the prognosis for at least six or eight weeks, for we find that many of the wrist drops will wholly clear up by the end of that time, and leave nothing but a simple upper arm type of paralysis. When the wrist drop has not cleared up by the end of six or eight weeks, we then classify the type as whole arm paralysis and treat it on that basis.

As I have stated before, the pupillary inequality is of the greatest importance. A good many cases present at first pupillary inequality, with the small pupil on the affected side. If this pupillary inequality persists in connection with the wrist drop, or the whole arm type of paralysis, beyond six or eight weeks, we are sure we are dealing with a serious injury to the plexus, which has probably resulted in an evulsion of the two lower roots of the plexus from the spinal cord, and so breaks the reflex sympathetic arc, which connects with the motor control of the eye. This is an important pathognomonic point, and if the pupillary inequality persists, one may be absolutely sure and safe in giving a bad prognosis.

TREATMENT

The treatment of these cases has not varied very much from that which has been previously described. We are not as insistent on the use of splints from the very start as we were at first, and the reason for the change is this: We have found that in certain cases the use of a splint seems to cause a certain amount of swelling about the wrist and elbow, and makes the exercise treatment, when the splint is removed, painful and difficult. Just why this should occur we have not been able to determine, but it has occurred and makes us a little more guarded in the use of the splint. We have found also that the use of the splint in certain children leads to a slower convalescence and a less free use of the arm, even with adequate treatment, so that we discard the splint, even in the face of the possibility of increasing muscle contractures, because we feel that we may be able adequately to supervise treatment to control the contractures, and in this way give the child a freer and better use of the arm than it would have with the constant wearing of the splint. Operations designed to relieve muscle contracture we undertake freely, as a rule, not earlier than four or five years, and by division of the contracted muscles we find that we are able to give the child a very much better arm, not only from a cosmetic but also from a functional point of view.

In regard to operations on the brachial plexus, we are not taking quite the radical stand that we have taken in the past. We are more willing to operate in certain cases, particularly in those of the upper arm type in which one or two muscles seem to be permanently paralyzed or weakened, so much so that they cannot function successfully. In the whole arm type of cases, when there is no functional improvement at all from muscle reeducation, operation on the plexus is indicated but nothing is promised.

In the whole arm types, we feel that three months is a fair period to try massage and muscle reeducation and if there is no evidence of any functional return during that period, that it is fair at the end of that time to explore the plexus and attempt to repair it.

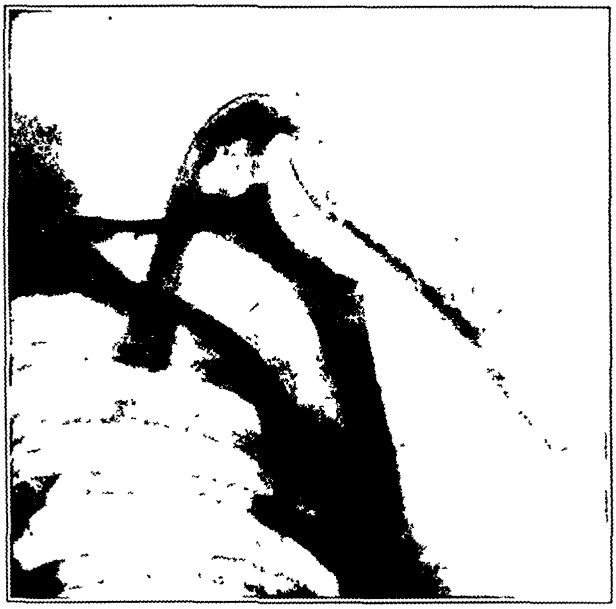
In the upper arm types, we often wait until the children are 4 or 5 years old, because by that time we can also divide muscle contractures that are preventing free use of the arm. We have had no very brilliant results from the plexus repair. Many of the plexuses that have been operated on have shown absolutely nothing in the way of functional recovery, and nothing could be expected from the type of injury found at the time of operation.

A few cases suggest that a plexus operation, always in connection with the muscle operation, may offer a better arm in the end. However, we are not overenthusiastic on this point. In certain of the older children, posterior subluxation of the shoulder joint can be reduced only (1) by means of the muscle cutting operation and (2) by the division and elevation or removal of the hooking of the acromion, which comes down in front of the head of the humerus, and prevents its proper reduction.

In a certain number of cases in which the pronator radii teres has become very much contracted, we have divided this muscle with great benefit.

AUTHOR'S OPERATION

An incision is made on the anterior aspect of the arm, beginning at the tip of the acromion and carried down to below the insertion of the pectoralis major. The cephalic vein is found generally in the outer edge of the wound and tied or retracted outward. The tendinous insertion of the pectoralis major is then defined, raised on an instrument, and divided all the way across. The pectoralis major muscle is then retracted inward, out of the way, bringing into view at the bottom of the wound the inner edge of the coracobrachialis muscle. This muscle is then defined upward until the coracoid process is reached, the arm being outwardly rotated and abducted. The tip of the coracoid process, which is usually found elongated, is completely separated from its base, together with the insertion of the coracobrachialis, the short head of the biceps and the pectoralis minor. Not more than about one fourth or three eighths of the tip needs to be removed to accomplish this. This allows the coracobrachialis and the short head of the biceps to retract downward out of the way, and allows much freer outward rotation and abduction of the arm. The capsule of the shoulder joint is then seen in the bottom of the wound as well as the three horizontal circumflex veins. Just above the upper vein is the lower edge of the subscapularis tendon. This lower edge should be defined. A curved instrument is then inserted just underneath this tendon, which is fairly wide at this point, and the tendon completely divided on the instrument. This prevents any opening of the shoulder joint capsule; and, once this subscapularis tendon has been divided, outward rotation, abduction and elevation of the arm are perfectly free.


Old case of obstetric paralysis, showing deformity of head, marked hooking of the acromion, flattening of the glenoid, and subluxation of head.

The only condition then that will block free outward rotation, abduction and elevation is a considerable degree of hooking of the acromion. If this condition exists, such portions of the acromion as block the restoration of the head of the humerus to the glenoid should be removed. The operation is then complete and the only stitches needed to close the wound are stitches to the fascia and skin. The arm is then put up on a splint in an abducted, elevated, outwardly rotated and supinated position.

Muscle reeducation, active and passive use of the arm, begins just as soon as the stitches are out, which is in about eight or ten days.

We have operated in about sixty or seventy cases. Our results have been satisfactory, that is, in the upper arm types, and while we cannot restore the arms to normal, we can improve them functionally, so that they are very useful.

There are one or two preoperative conditions that have bothered us a good deal: 1. For about a year after this operation, and sometimes even longer, there is considerable difficulty in inwardly rotating the upper arm, or in putting the hand on the opposite shoulder. 2. In almost all cases after operation there is a good deal of limitation of rotation in the joint itself, which, however, is eventually overcome. 3. With the arm hanging at the side, there persists almost always a considerable rotation of the scapula in a vertical plane, even when there is apparently free motion of the shoulder joint. Just why this is we have not been able to determine. It does not impair the function of the arm, but does not make for a cosmetic success.

CONCLUSIONS

In the main, our experience has been that if we can get our babies early, we can in a great many instances prevent later operations, that is, on the upper arm types, and we can give them fairly good functional arms, with the exception of the ability to supinate normally. In old cases in which there has been no treatment, operation has to be performed almost invariably

Children are better treated under the eyes of a physician and a properly trained masseur or nurse. Better results are obtained in this way than with those babies left to the parents' care. We have to leave a great many babies to the parents on account of economical and social conditions, and because they live far from the clinic. We do not like to do so, because our results are never as satisfactory.

The treatment is, as in every condition occurring in babyhood, to be begun immediately and should be carried out faithfully for years, and except in the whole arm type of paralysis, a fairly good functional arm can be hoped for. Arms, when first seen, should never be put in a sling or a Velpeau bandage, but should be either left entirely free with the other arm pinned, or should be put on a splint.

321 Dartmouth Street.

Cost of County Health Department.—For all except the most sparsely populated and poorest counties, the minimum cost of a county health department should be at least $10,000 a year. In the more populous counties, a larger budget will be needed to secure adequate service. In general, it may be stated that an expenditure of 50 cents per capita per annum should furnish a county with reasonably adequate health service. (This does not include hospital expenses, bedside nursing, or pauper relief.) A budget of 25 cents per capita should be the minimum in any except the poorest counties.—Parran, Thomas, Jr.: Cooperative County Health Work, *Pub. Health Rep.* **40**:986 (May 15) 1925.

BIRTH INJURIES REQUIRING ORTHOPEDIC TREATMENTS *

SAMUEL W. BOORSTEIN, M.D.
NEW YORK

In the last few years, proper and immediate treatment of the child for injuries received at parturition has been instituted. The prognosis in these serious injuries has therefore been greatly modified. The profession at large and the lay public recognize that many of the conditions, classified till now as congenital, are really but later manifestations of traumatic lesions sustained at birth. These lesions remained undiagnosed in the new-born, possibly because their symptoms were not recognized, but more probably because the obstetrician failed to examine the new-born with the necessary care. If the infants are properly examined immediately after birth and the early symptoms looked for, a fair diagnosis may perhaps be reached. A great many of the later disabling deformities can be avoided should the obstetrician consult the orthopedic surgeon shortly after parturition. Many of these cases could be entirely cured. It is my purpose in this paper to impress on the profession the necessity of very early orthopedic treatments. The methods should be stressed in the medical schools. Some of these treatments can be instituted by the general practitioner himself.

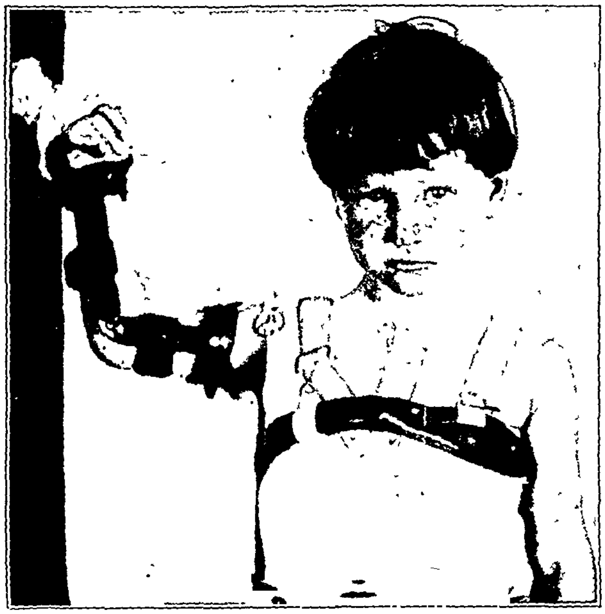


Fig. 1.—Patient with Erb's paralysis after a Sever operation, showing the proper position in which a deltoid brace should be worn in such cases.

GENERAL CONSIDERATIONS

A birth injury refers to traumatic injuries sustained during labor and delivery and in the common and necessary manipulation of the new-born. Ehrenfest[1] arrives at the following conclusions:

> I lay stress on the fact that the child can be more or less severely traumatized also in a normal labor, in a spontaneous labor, if we grant that the term "spontaneous" by common consent includes as well deliveries in which the expulsion of the fetus is actually hastened by a dose of pituitary extract. In by far the larger number of instances, however, serious traumas are observed after labors terminated by operations or other artificial means.

Such statements, coming from so noted an obstetrician, should be a warning to prevent occurrence of birth injuries. If this warning is heeded, no orthopedic care will be necessary.

The best results in all these injuries can be obtained if the treatments are instituted early. The obstetric services of the general and special hospitals should include in their armamentarium the orthopedic appliances to institute early treatment.

INTRACRANIAL INJURIES

Intracranial injuries constitute the most serious and pathetic cases and embody the idiotic, epileptic, Little's, paraplegia, diplegia, hemiplegia and monoplegia. Ehrenfest[2] says:

> For the majority of them, the responsible mechanical cause is recognized in definite anomalies of labor, breech labors, extraction of the aftercoming head after version, difficult forceps extractions, especially in the cases of mechanical dystocia, etc. In spontaneous delivery, the immediate cause of the injury is a mechanical one, the compression of the head on its passage through the birth canal, both through its bony and its soft portions.
>
> In the presence of only slight intracephalic traumatic lesions, a decreased coagulability of the blood and inappropriate manipulations during resuscitation necessarily tend to hasten or to prolong the escape of blood from injured vessels, though small, and thus represent important contributory factors in the causation of cerebral hemorrhages.

The pathologic condition is a lesion of the motor area of the brain. This is followed by atrophy, retarded development, sclerosis or softening of the affected portion and a degeneration of the pyramidal tracts and later the columns of the cord.

Symptomatology.—The symptoms of late cases are well known and need not be repeated here. Effective therapy, often life saving, is plainly dependent on early diagnosis. As most of the deliveries are performed by the general practitioner, it is he who must familiarize himself with the early symptomatology so that he will be able actually to diagnose, or at least to know when to suspect, such injuries.

The early symptoms are as follows: The infants are very restless and cry almost incessantly. Pressure on the fontanel produces respiratory distress, screaming or even convulsions. If the hemorrhage is not excessive, these infants refuse to nurse. Nursing usually is poor and clumsy. Retinal hemorrhages, inequality of the pupils, squinting and nystagmus are often found.

Obstetric prophylaxis is out of the sphere of this paper.

Orthopedic Prophylactic Treatments.—I agree with Steindler[3] when he says:

> In no form of paralysis is the importance of prophylactic measures so great in preventing deformities as it is in spastic paralysis; and in no form of paralysis has it been so little used and the possibilities of prophylaxis so grossly neglected

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* From the surgical and obstetric divisions of Fordham Hospital.

* Read before the Section on Orthopedic Surgery at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] Ehrenfest, Hugo: The Prevention of Birth Injuries of the Child, Illinois M. J. 44:20 (July) 1923.

[2] Ehrenfest, Hugo: Birth Injuries of the Child, New York, D. Appleton & Co., 1922.

[3] Steindler, Arthur: Reconstructive Surgery of the Upper Extremity, New York, D. Appleton & Co., 1923.

as in this very type. The measures to prevent contractures must be instituted at the earliest possible moment. This is even more urgent in spastic cases than in flaccid paralysis, where the deformities develop more gradually and are, for a longer time, amenable to correction.

The prevention of contractures has been followed by all progressive orthopedists in anterior poliomyelitis, in obstetric paralysis and in peripheral nerve injury. In previous papers I[4] have shown that, in hemiplegias occurring in adults, all the deformities can be prevented if plaster is applied immediately after the apoplectic attack. It seems logical, therefore, that this should be efficacious in these infants. A small Thomas double abduction frame with attachments for the hands to keep the shoulders abducted and rotated outward, and provisions for increasing the abduction of the lower extremities, will do the work well. There must be foot pieces to hold the feet at a right angle. The flexion contracture of the elbow is usually not as rigid as the contracture of the wrist joints. If the angle of flexion is suitable, one need not change it. For the elbow, we may use a Funsten brace advocated by Steindler.[3] For the hand, a Jones cock-up splint is used. If the symptoms point toward hemiplegia, we should use the same methods for one side only and pay special attention to the Achilles tendon and to the wrist. Such splints can be kept at hand like Thomas Jones splints for fractured femurs.

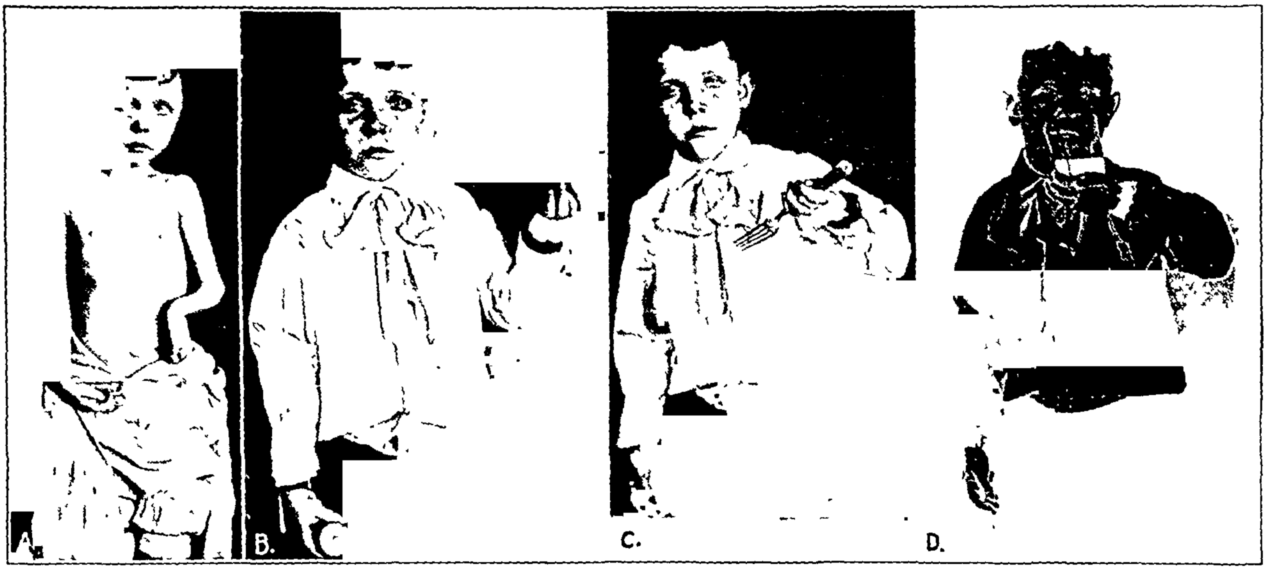

Fig. 2.—Very severe case of double obstetric paralysis, lower arm type: *A*, Nov. 23, 1920, before treatments, showing position of hands and the deformities; *B*, Aug. 23, 1923, after operations, showing ability to throw ball with the right hand; *C*, Aug. 23, 1923, showing ability to use a fork with the left hand; *D*, Aug. 23, 1923, showing ability to drink with the left hand.

The braces can easily be applied and used for a few weeks. Even if no further symptoms develop, it will have been worth while. Massage and similar treatments are instituted when advisable. We cannot predict the mental deficiency, but the deformities prevented will have a beneficial effect. (We know that even in later life the mental condition often improves if the contractions are removed.)

I have had quite a few cases treated in this manner in early infancy with most encouraging results. Unfortunately, none of these cases came to me when only 1 or 2 days old. They are very seldom referred to us so soon. I hope that articles such as this will stimulate the obstetrician to refer them early.

If the child is seen later, the general treatments advocated by the orthopedists are used. Jones and Lovett[5] outline these treatments as follows: muscle reeducation; operations on the muscles or tendons as tenotomy, myotomy and muscle transplantation; operations on the nervous system such as cerebral decompression, Forster's operation, Stoffel's operation, and alcohol infiltration of nerves. At present we add the new method of sympathetic ramisection advocated by Royle.[6]

The treatment of the mental condition of the child is beyond the scope of this paper.

OBSTETRIC BRACHIAL PARALYSIS

Obstetric brachial paralysis, which up to a few years ago was considered incurable, has been brought before the profession by Taylor,[7] Sever,[8] Fairbank,[9] Platt,[10] and myself.[11] The etiology has been cleared up. The condition is now considered curable, and the earlier the treatments are instituted the better are the results. The orthopedic surgeon is now being consulted very early and thus he has a chance to prevent the distressing and disabling deformities and frequently to institute a complete cure. In a previous article,[12] I gave the following conclusions:

1. Obstetric brachial paralysis is due to stretching or tearing of the cervical roots of the brachial plexus.

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[4] Elliott, G. R., and Boorstein, S. W.: Orthopedic Treatment in Hemiplegics of Long Standing, J. A. M. A. **47**: 31-32 (July 1) 1916. Taylor, A. S.; Byrne, Joseph; and Boorstein, S. W.: Early Surgical and Orthopedic Treatments in Hemiplegia, Surg., Gynec. & Obst. **29**: 398 (Oct.) 1919.

[5] Jones, Robert; and Lovett, R. W.: Orthopedic Surgery, New York, William Wood & Co., 1923.

[6] Royle, N. D.: The Treatment of Spastic Paralysis by Sympathetic Ramisection: Experimental Basis and Clinical Results, Surg., Gynec. & Obst. **39**: 701-720 (Dec.) 1924.

[7] Taylor, A. S.: Brachial Birth Palsy and Injuries of Similar Type in Adults, Surg., Gynec. & Obst. **30**: 494-503 (May) 1920.

[8] Sever, J. W.: Obstetric Paralysis, Am. J. Dis. Child. **12**: 541-578 (Dec.) 1916.

[9] Fairbank, H. A. T.: J. Orthop. Surg. **2**: 284, 1920 (discussion).

[10] Platt, Harry: Birth Paralysis, J. Orth. Surg. **2**: 272 (May) 1920.

[11] Boorstein, S. W.: Treatment of Obstetric Paralysis with a Report of Fifty Cases, J. Bone & Joint Surg. **5**: 778-803 (Oct.) 1923; Obstetric Brachial Paralysis (Erb's Palsy), J. A. M. A. **82**: 862-868 (March 15) 1924.

[12] Boorstein (Footnote 11, second reference).

2. It is almost always associated with a difficult labor; in many instances, forceps having been used.

3. If these cases are treated early and properly, one may expect in the mild cases a good recovery in three or four months.

4 The more severe cases will require about six or seven months for a complete recovery.

5. Nerve operations are indicated if no advance is made in four months. After that period, if sufficient improvement is noticed one may wait four months more, provided, of course, proper orthopedic treatments are continued.

6. The shoulder should immediately be put up in a splint or brace to prevent stretching of the paralyzed muscles and contracture of the unopposed muscles. (Figs. 1 and 8 *B, D.*).

7 Even in the whole or the lower type, one may try conservative treatments for a while and then resort to a plexus operation. The result is not so discouraging as some textbooks would lead us to believe (Fig. 2).

FRACTURES

There are two kinds of fractures: (1) true fractures due to a definite trauma from without, and (2) pseudofractures due to amniotic adhesions, amniotic bands and intra-uterine pressure. Some of the uterine fractures produced at the delivery are really due to a previous existing intra-uterine disease. Whether the disease is responsible for the fracture or the trauma used at the delivery, it is certainly acknowledged that of all the birth injuries this is the most embarrassing. Any one who has been so unfortunate as to hear suddenly the crack of a bone after a hard delivery and has looked around at the family standing near-by will never forget the situation. He is certainly anxious to obtain assistance quickly. He may trust the textbooks which assert that the fractures usually heal, but he must know how to fix them up immediately. For such accidents the student and the general practitioner must be prepared in advance.

The bones most commonly fractured are the femur and humerus. The humerus is broken both in vertex and breech labors by being firmly pressed against the symphysis. This pressure is exaggerated by traction on the fetus. Fractures of the femur are usually transverse in its upper half or third. Fractures of the tibia and fibula are usually produced in the management or mismanagement of breech labors.

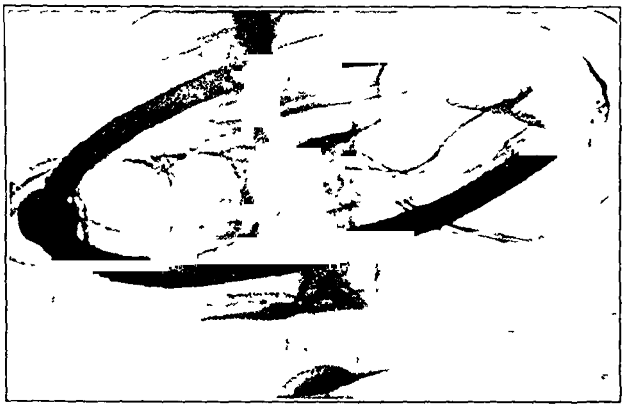

Fig. 3.—Fracture of the femur, showing improper adjustment of the Thomas Jones splint; this was afterward corrected.

Fractures of the Clavicle.—These are more common than formerly believed. They are found in vertex as well as in breech presentations and are usually transverse. The arm lying limply at the side should suggest the possibility of this fracture in addition to brachial palsy. The prognosis is good.

A separation of the epiphysis of the humerus may also be found at the shoulder as a result of traction, but it is hard to recognize unless symptoms are noticeable.

Injuries of the Cranial Bones.—Ordinarily these are mere fissures or deep indentations that do not give rise to any visible anomalies. The dangers are usually the result of intracranial injuries.

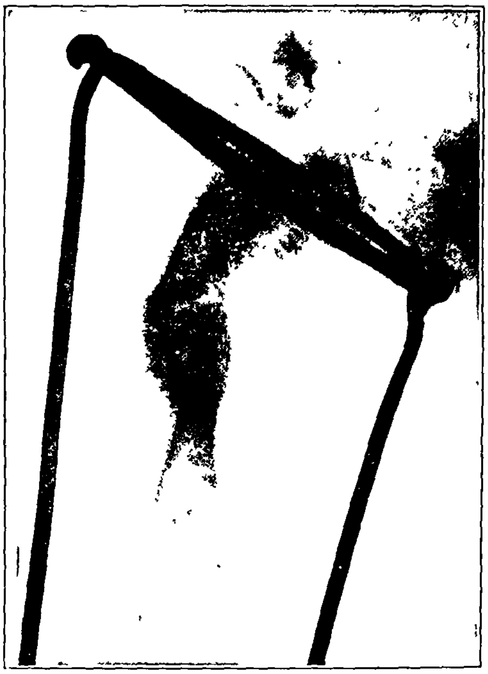

Fig. 4.—Fracture of femur: splint in place, with marked callus present.

Fractures of Vertebral Column.—These are common in version and extraction, often causing an injury to the cord also. Hyperextension of the vertebral column in the Veit-Smellie maneuver makes that procedure dangerous. The symptoms are often those of cord injury. A roentgenogram should be taken of the spine in each case of suspected spinal injury.

Diagnosis.—In diagnosing a fracture to determine whether it was sustained during birth or within the uterus, it might be helpful to note that, according to Jones and Lovett,[5] fractures at birth are healed with some deformity over the apex, and there is generally a dimple or scarlike mark.

Treatment.—Many complicated methods have been advocated for the treatment of fractures of the upper and lower extremities. In a previous paper, I[13] discussed these methods in detail and came to the conclusion that a Thomas Jones splint can be used. A half ring is more adaptable in these cases. The ring must not be too wide, as it will press on the axillary vessels, if the case is one involving the upper extremity, and thus produce a deformity. I have used the Thomas Jones splint in many cases and have become convinced of the ease with which the splint can be applied in fractures of the femur, humerus, tibia, fibula and the forearm bones. I have become impressed by the good results that almost invariably follow the use of the splint (Figs. 3, 4 and 5).

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[13] Boorstein, S. W.: Treatment of Birth Fractures at Fordham Hospital, Am. J. Dis. Child. **19**: 375-383 (May) 1920.

The advantages are that it allows easier transportation, permits cleansing of the children and saves a great deal of watching. It permits early massage. The deformity is easily controlled. The union probably occurs earlier on account of the ability of the infant to use the limb, to elevate it together with the brace.

In fractures at the elbow joint, acute flexion (the Jones principle) should be followed. This can be done with the plaster of Paris or a flannel bandage.

For fractures of the clavicle—though some suggest that no treatments are necessary—I have always considered some form of treatment advisable. It can be immobilized by a figure-of-eight flannel bandage to the other shoulder, but one should protect the axillae by putting felt under the bandage (Fig. 6).

Treatment of separation of the epiphysis of the humerus should consist of immobilization on a deltoid abduction splint.

For fracture of cranial bones, the symptomless case is best let alone; but if there are signs of an intracephalic disturbance, the treatment should be surgical. It is hard, however, to decide when to operate, and these doubtful cases should be watched very carefully for a few weeks to note symptoms of intracranial pressure. The orthopedic treatments for the extremities should, however, not be neglected. We may hope that the carefully recorded necropsies on the early deaths may help us to decide when to operate.

TORTICOLLIS

Of the other injuries sustained at birth, torticollis should be mentioned. Meyerding[14] supports the congenital theory, but says that it may be due to trauma at or preceding birth. Stern[15] reports a rare case to support the theory that congenital torticollis is due to an abnormal attitude and lack of space in the uterus. Still, many cases of obstetric paralysis or fractured clavicle give evidence of injury of the sternocleidomastoid. Jones and Lovett[5] are of the distinct opinion that hematoma of the sternocleidomastoid often produces torticollis.

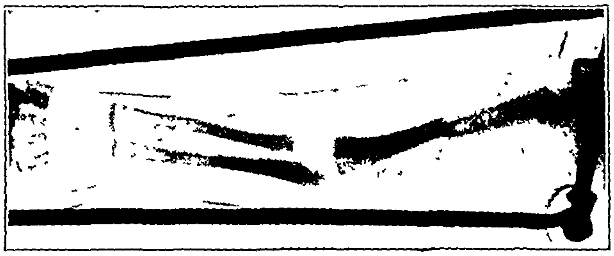

Fig. 5.—Birth fracture of the humerus in a Thomas Jones splint, showing how the fragments can be held with that splint

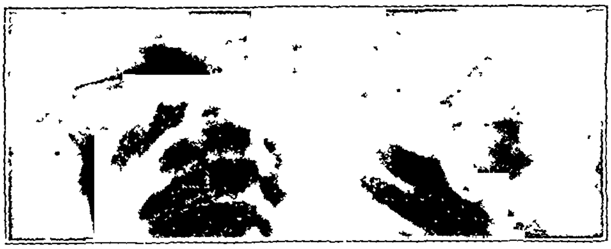

Fig. 6.—Birth fracture of the clavicle: good position and abundance of callus

Treatment.—Support is needed and can easily be given by a felt collar applied to the neck to keep the head straight. One can put soft flannel underneath. The felt collar does not interfere with the nursing and is removed for massage (Fig. 7).

CONCLUSIONS

1. Many permanent injuries are traced to parturitional trauma.

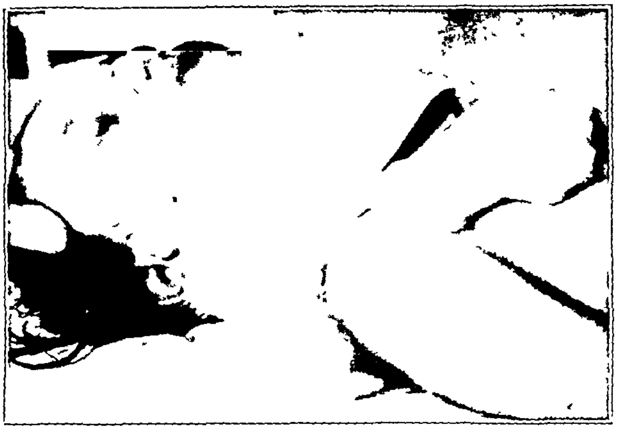

Fig 7.—Application of a felt collar after operation for torticollis; final result with this immobilization was very good; it may be applied immediately after birth without discomfort

2. Many of these injuries can be diagnosed at birth if careful examination is made.
3. The obstetrician or the general practitioner should acquaint himself with the proper methods of prompt diagnosis so that early treatment can be instituted where necessary. If he himself cannot diagnose the case, he should consult the orthopedic surgeon.
4. The spastic cases should be treated at once even when we are in doubt whether the mental condition of the child will ever be normal. One cannot foretell how much mental recovery will be obtained.
5. The armamentarium of the obstetric service in the hospital should include the braces or wire splints necessary for immediate attention in these cases.
6. Cases of intracranial injury are treated by a double Thomas abduction frame with arm attachments.
7. Obstetric brachial paralysis is best treated by a plaster or an abduction splint keeping the arm in abduction and outward rotation. Later on, massage and exercises are instituted.
8. Fractures of the femur and the humerus are treated with a small Thomas Jones splint.
9. Fractures of the spine are treated by means of a Bradford frame.
10. Torticollis is prevented by a felt collar around the neck.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. SEVER AND BOORSTEIN

Dr. J. T. Rugh, Philadelphia: There is no doubt that the accuracy of observation of the general run of practitioners is not as keen as it should be The education of the practitioner constitutes a large field of our work: not that we can make orthopedic surgeons out of them—that is an impossibility—but that we draw their attention to the frequency of malformations at the birth of the child, and the necessity of the early recognition of these conditions. There are several points that I wish to emphasize. In the first place, Dr. Boorstein advocated the equipment of our hospitals with orthopedic appliances that will enable the obstetricians or the surgeons to take care of these cases. There are two distinct types of the work presented in both of these papers. One is the work by the general practitioner in the home of the patient, and the other is the work of the obstetrician and the surgeon in institutions. There is a marked difference between them, and I believe that our greatest work lies with the practitioner in the home, rather than in institutions. It is very nice to have an equipment that will enable the practitioner to take care of these deformities when they arise, but how many of them know how to use mechanical appliances? In regard to the special types of deformities, congenital fractures have been mentioned. There is one I would call attention to that has proved most troublesome, and that is the congenital fracture in the lower third of the tibia, often due to a congenital cyst or to some disease condition in the lower end of that bone of unknown origin. Those cases have proved in my hands the most troublesome type of congenital fractures, and in several instances have ultimately resulted in amputation of the leg. I want to stress the importance of the classification of the obstetric paralyses of the arm as given by Dr. Sever. We must make more accurate observations as to the type of paralysis, whether the upper arm type, the lower arm type, or the total paralysis. The other point I wish to mention is with regard to cases of congenital torticollis. I feel very strongly that there is in the majority of these cases a traumatic element rather than a congenital condition.

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[14] Meyerding, H. W.: Congenital Torticollis, J. Orth. Surg. 3:91 (March) 1921.

[15] Stern, A.: Etiology of Congenital Torticollis, Monatschr. f. Geburtsh u. Gynak. 65:179, 1924.

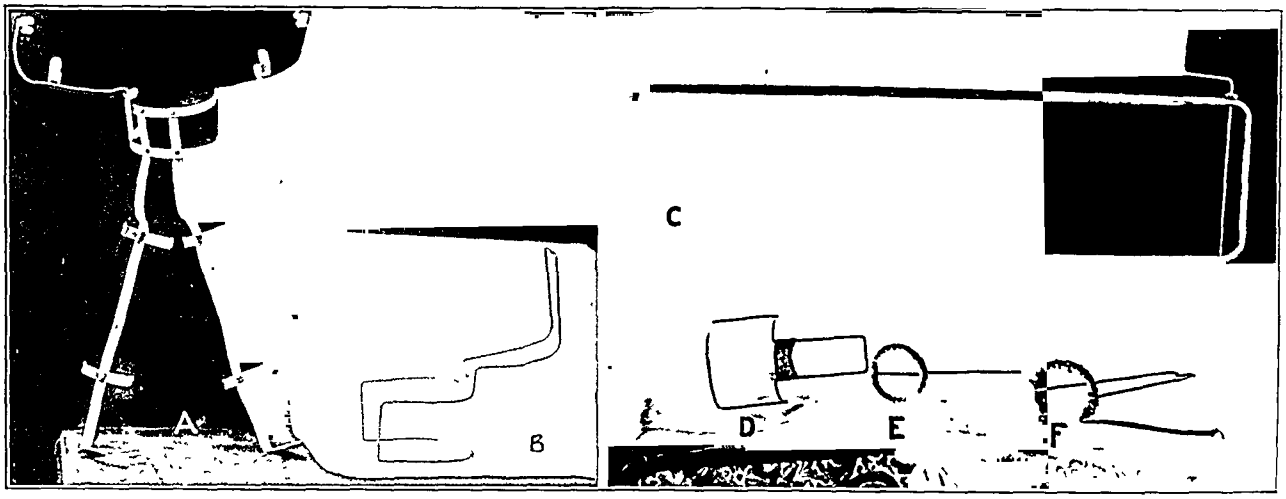

Fig. 8.—Armamentarium of orthopedic appliances for obstetric service: *A*, Thomas abduction frame; *B*, wire splint for obstetric paralysis; *C*, Bradford frame, with a windlass; *D*, wire splint for obstetric paralysis, with a narrow body frame; *E*, small Thomas Jones splint with a closed ring; *F*, small Thomas Jones splint with half ring.

Dr. H. J. Fitzsimmons, Boston: One of the authors and Dr. Rugh have somewhat misled us in stating that the congenital torticollis is correctible by a simple apparatus. A congenital torticollis is one in which there is a congenital shortening of the muscle. The ones that Dr. Rugh mentioned are acquired. They may be due to obstetric injuries, but the majority of congenital torticollis cases are not. This is an observation made from a study of more than 500 cases. They are found in extra-uterine pregnancies and in conditions in which there has been no trauma, and certain of the hematomas that are found after strenuous deliveries and injuries are not followed by torticollis.

Dr. G. I. Bauman, Cleveland: I have been impressed with the fact that injuries to the sternocleidomastoid are not at all uncommon. To my knowledge, none of those cases have been followed by a torticollis. The sternomastoid muscle is changed from ordinary muscle tissue to fibrous tissue. In other words, there is a fibrosis of the muscle, and that is not usually the result of a trauma in other muscles. I should like to ask Dr. Boorstein whether he has seen a real torticollis following a hematoma in the sternomastoid muscle. A few years ago I examined a baby with a double obstetric paralysis, absolutely symmetrical, and of the whole arm type. Has Dr. Sever seen any similar case?

Dr. Samuel W. Boorstein, New York: Dr. Rugh mentioned that there is a great deal of difference between treating these patients at home and in institutions. Of course, orthopedic surgeons can treat these cases better, but I did not want to appear too self-interested by making the statement that all cases should be sent to them. Besides, as Dr. Sever said, many of these patients live out of town, and the general practitioners should know how to take care of them partially, and see the orthopedic surgeon occasionally. Dr. Rugh mentioned congenital torticollis, and Dr. Bauman asked me whether I have ever seen a case following hematoma. I have not. I said that in many cases that does follow and that Jones and Lovett gave it as a cause that it may very often follow, and I felt it was worth while to prevent its occurrence.

Dr. J. W. Sever, Boston: It is poor obstetrics in many instances that gives us these serious conditions. The thing to look for is an arm that lies at the side perfectly weak and paralyzed, inwardly rotated, the hand pronated, and no muscle power whatever, unequal pupils, frequently ptosis of the eyelids, sometimes a facial paralysis. That is a perfectly typical, complete picture. When one has a case like that, one should not tell the parents that the child is going to make a perfect recovery. I have never seen a perfect, complete recovery under any conditions. These patients always carry through life a picture of obstetric paralysis of the arm. I did not suppose that the question of hematoma ever entered into the question of torticollis. I have never seen a case of torticollis following hematoma. I supposed the theory had been accepted as shown by Josserand and Viannay in 1906 that it was due to an intra-uterine position in most cases which held the head in such a position that the arterial supply from the superior thyroid artery to the sternomastoid muscle was cut off, and as a result there occurred a contraction or fibrosis of the sternomastoid. That is apparently the accepted and true cause, at least as far as we know, of congenital torticollis. In regard to the double arm type of obstetric paralysis, we have had a number of cases which I have reported. They rarely are symmetrical. One arm usually is a little bit better than the other; one gets a little bit better as time goes on. I have never seen an absolutely symmetrical double arm type.

KIDNEY STONE AS A DIAGNOSTIC PROBLEM *

B. H. NICHOLS, M.D.
CLEVELAND

No consideration of kidney stones as a diagnostic problem is complete without a review of the clinical and urologic symptoms presented by this type of disease of the kidney. If we are to study only the cases in which the suspicion that a stone may be present is aroused by pain of the renal colic type, then many cases of renal calculus will remain undiagnosed. There are many cases in which pain in the genito-urinary tract is a minor complaint or is entirely absent, and I feel that in such cases, which present an atypical symptomatologic syndrome, the liability of an error in diagnosis is most apt to occur. In order to obviate this, a wholesome respect must be paid to all the symptoms that may be present in a patient suffering with a calculus of the kidney.

I am prompted to prepare this paper by the frequency with which kidney stones are found by roentgen-ray examination in patients who have been referred to me for the roentgenologic study of structures other than the kidney. In consequence, I have come to believe that in many cases kidney stones are not apprehended on account of insufficient or atypical symptoms. In order to arrive at a conclusion regarding the significance of certain clinical symptoms of calculus of the kidney, I have analyzed a series of cases to determine the frequency of occurrence of certain symptoms, together with their characteristics, and will consider them in the order of the frequency of their occurrence in this series.

TABLE 1.—*Calculus of the Kidney: Cases in Which Presence of Stone Was Definitely Proved*

	Number	Per Cent.	
Number in series			164
Sex:	Number	Per Cent.	
Male	104	63.4	
Female	60	36.6	
Age:	Number		
Under 10 years	2		
10 to 20 years	2		
20 to 30 years	19		
30 to 40 years	42		
40 to 50 years	43		
50 to 60 years	33		
60 to 70 years	9		
70 to 80 years	3		
Age not stated	11		
Side Involved:	Number	Per Cent.	
Right	71	43.3	
Left	77	46.9	
Bilateral	16	9.76	
Multiple or Single Stones:	Number		
Unilateral:			
Multiple	61		
Single	88		
Not stated	1		
Bilateral:			
Single in each	5		
Single in one and multiple in other	4		
Multiple in each	5		
Operations performed at clinic			92

TABLE 2.—*Symptoms*

		Number	Per Cent.
Pain		141	86
Pain	73		
Pus in urine		127	77
Hematuria		72	44
Frequency		49	30
Nausea or vomiting		44	26.8
Fever		23	14
Chills		15	9.17

TABLE 3.—*Other Conditions Associated with Kidney Calculus*

		Number	
Calculus of kidney with gallstones		3	
Calculus of kidney with duodenal ulcer		3	
Calculus of kidney in horseshoe kidney		3	
Calculus of kidney with hydronephrosis (5 had stone in ureter also; 1 had aberrant blood vessels)		41	25%
Calculus of kidney with focus of infection		27	
Teeth	20		
Tonsils	6		
Teeth and tonsils	1		

TABLE 4.—*Roentgenograms*

		Number
Clinic roentgen-ray examination positive		142
Clinic roentgen-ray examination negative		1
Roentgenogram taken outside		12
No roentgenogram taken		9
Confirmed at operation	6	
Confirmed at necropsy	2	
Confirmed, passing stone	1	

TABLE 5.—*Recurrences*

	Number
Total cases with history of passing stone	41
Previous operation for kidney stone	16
Previous operation for bladder stone	4
Previous operation for ureteral stone	1
Second operation for kidney stone	1
Passing stones after operation	1
Previous operation for kidney stone and recurrence after second operation	1

TABLE 6.—*Atypical Clinical History of Kidney Stone and Symptomless Stones*

	Number
Consultation because life insurance had been refused	4
Stone caught on roentgenogram of spine	5
Stone caught on roentgenogram of gastro-intestinal tract	5
Stone caught on roentgenogram of genito-urinary tract for clinically diagnosed lesion of bladder or prostate	3
Stone found at necropsy	1
Symptomless stone	7
Consultation for cold and inguinal adenitis	1
Stone found at operation in case in which roentgenograms of gastro-intestinal tract only were made and were negative	1
Total	27

SYMPTOMS

As is shown in Table 2, pain is the most constant symptom of kidney stone, having been present in 86 per cent. of the series. It is of two types: (1) aching or continuous pain, and (2) colicky pain, the so-called renal colic.

There may be a history of long standing pain with alternating periods of relief and exacerbations. When pain is accompanied by pyuria, hematuria or frequency it is reasonable to suspect that it is due to a renal calculus, and a roentgen-ray study of the kidney should be made.

Renal colic usually has a sudden onset and may require the use of an opiate for relief. If the colic is accompanied by microscopic blood or pus, the presence of calcium oxalate in the urine or uric acid crystals, together with a history of previous attacks or of the previous passage of gravel, then a roentgen-ray examination of the kidney should be made, with the expectation that a kidney stone will be found.

Next to pain, pyuria is the most common symptom and was present in 77 per cent. of this series. The presence of pus in the urine, particularly in the absence of an infection of the bladder or urethra, should always suggest the possibility of a kidney stone, especially if there is pain in the region of the kidney.

Hematuria was found in 44 per cent. of the cases. When accompanied by pyuria and pain, this is a suspicious symptom and a search should be made for kidney stone.

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* Read before the meeting on radiology in the Section on Miscellaneous Topics at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

The symptoms of lesser importance, unless accompanied by pain, pyuria or hematuria, in the order of their occurrence in this series, are: frequency, 30 per cent.; nausea and vomiting, 26.5 per cent.; fever, 14 per cent.; chills, 9.17 per cent.

Other points of more or less importance that have been brought out in the study of this series have been the markedly higher incidence in males (63.4 per cent.); the association of the stone with hydronephrosis in 25 per cent. of the cases; the recurrence of stones and a history of a previous operation for stone.

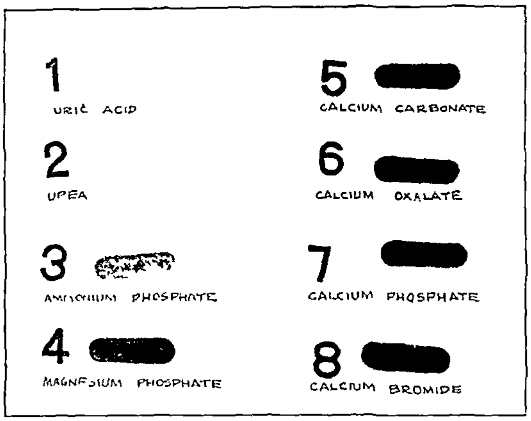


Fig 1.—Roentgenograms of capsules filled with various salts found in kidney calculi

To determine the radiability of the various types of kidney calculi, I have determined the radiability of the usual salts found in calculi by taking roentgenograms of ordinary capsules which had been filled with the pure salts (Fig 1). These studies show that uric acid has the least, and calcium bromid the greatest density; the order of density of the other salts is: uric acid, urea, ammonium phosphate, magnesium phosphate, calcium carbonate, calcium oxalate, calcium phosphate and calcium bromid.

Cystin and xanthin, both of which are rare salts, were not studied.

TYPES OF KIDNEY STONES

Kidney stones are of two types: primary, or essential, and secondary. Stones of the essential type are formed without any apparent primary disease. This may not actually be the case, however, as it is probable that a primary disease has existed but has caused no recognizable symptoms. The formation of these stones is undoubtedly due to a sedimentation of the urinary salts, while the secondary cases are always formed about a nucleus of pus or mucus as the primary factor.

The principal chemical salts that are found in kidney calculi are uric acid, urea, calcium salts, particularly calcium oxalate, phosphates and cystin and xanthin. These salts may be pure or may be present in various combinations. The vast majority of calculi, especially the primary stones, are formed from uric acid and are often found in acid urine, associated with uric acid and crystals of urea. Uric acid stones are reddish brown, with a tendency to yellow tint. They are usually small and multiple, rather hard and faceted. They may be found as the nucleus of larger stones surrounded by a phosphate or oxalate deposit. If small, however, they may often be missed, especially if they are of a pure uric acid formation.

Fortunately for the roentgenologist, most calculi that have been present for some time in the kidney have incorporated phosphate or calcium oxalate in their formation, the high density of which is of material aid in their recognition. On the roentgen-ray film these stones show a density far beyond that of the surrounding kidney tissues; they are irregular in outline and, as previously stated, are usually multiple.

Stones formed from calcium oxalate are of a dark brownish, are rather regular in outline and have a rough surface, giving the so-called nutmeg appearance. Oxalate crystals are usually found in urine that is acid in reaction. These stones give a very distinct shadow on the roentgen-ray film and, as they are a secondary formation, they are usually large.

Calcium phosphate stones are formed rapidly and are irregular in outline. The urine in these cases is filled with phosphatic deposits and is alkaline in reaction. These stones are of medium density and are usually shown on the film. Cystin and xanthin stones are extremely rare.

With modern methods of examination, a large majority of kidney stones may be apprehended as suspicious shadows, on the primary examination. In all cases both kidneys should be examined, to rule out the possibility of bilateral calculi.

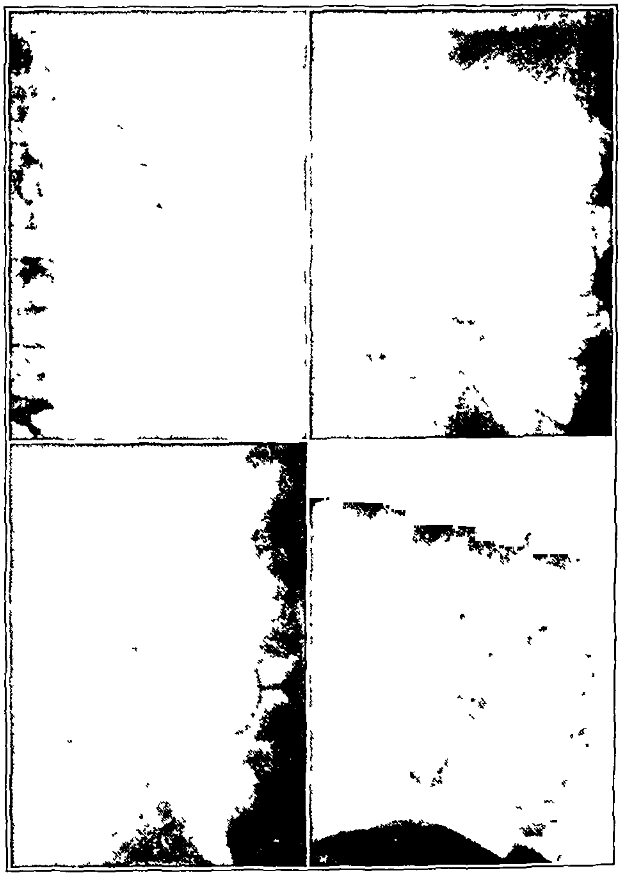


Fig 2.—Appearance of different types of calcified glands on the roentgen ray film

Shadows outside the kidney that may be confused with kidney calculi are gallstones, calcified glands (Fig. 2) retroperitoneal and mesenteric enteroliths, dense bone in the tip of a lateral vertebral process, foreign bodies in the soft tissues, especially in the intestinal tract, calcified venous aneurysms, warts on the skin, postoperative scar tissue, stones in the upper ureter, defects in the film and broncholiths. Shadows within the kidney simulating stones are usually tuberculous calcifications. In a great majority of cases, stereoscopic films will rule out the extranephritic shadows. Calcified glands have a characteristic irregular appearance simulating calcifications in soft tissue. Repeated examinations will rule out gastro-intestinal shadows. The patient should be inspected at the time of examination for warts or any other condition on the surface of the body, such as postoperative scars, which may cast a shadow; in case of doubt, two films will eliminate the artefact. Ureteral calculi will be apprehended by catheterization of the ureters and a ureterogram. Plain kidney films or a pyelogram may show whether or not the shadow is within or outside the kidney.

Tuberculous calcifications are characterized by multiple irregular and widely separated shadows within the kidney outline. Confirmation of this indication may often be established by the characteristic signs of tuberculosis, as shown by the pyelogram or by the presence of pus in the urine.

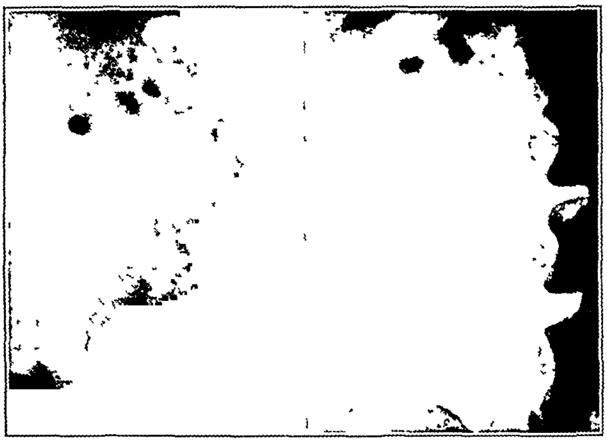


Fig 3.—Posterior anterior and anterior posterior views of kidney stones.

Of especial importance is the differentiation between gallstones and kidney stones. In some cases this may be established by the general appearance of the shadows. Gallstones usually produce more or less clearly circumscribed shadows. Many of them have an outer layer rich in calcium salts, which gives a ringlike shadow with a more translucent center. Gallstones are more often multiple than are kidney stones, their arrangement corresponding to the shape and location of the gallbladder.

Kidney stones, on the other hand, are usually irregular in shape, their form often corresponding to that of the kidney pelvis or calices; or, in some instances, the stone may fill the pelvis and have branches that extend into the calices. The shadows of kidney calculi are almost always of a homogeneous density, which is quite unlike the typical gallstone shadow.

In a fairly large percentage of cases, however, calculi cannot be identified by the size, shape or general appearance of their shadows, and in such cases specific means of differential diagnosis are required. The method that I have found of the greatest value is the use of the anterior-posterior and the posterior-anterior exposures in accordance with the principle used in the localization of foreign bodies. The greater the distance of the foreign body from the film, the greater will be the size of the impression on the film (Figs. 3 and 4).

In general, we may say that when the shadow of a stone on the posterior-anterior or gallbladder film is smaller, more distinct in outline, lower in position and nearer the vertebral column than the shadow of the same stone in the anterior-posterior or kidney film, the diagnosis of a gallstone may safely be made (Fig. 5).

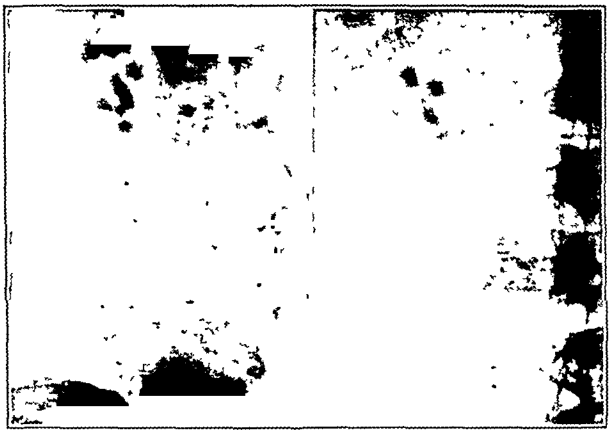


Fig 4.—Posterior-anterior and anterior-posterior views of kidney stones.

I have found that the most valuable auxiliary measure is a pyelogram, which in the case of a kidney calculus will locate the shadow in the pelvis of the kidney (Figs. 6, 7 and 8). In the case of a gallstone, the shadow on the pyelogram will almost always lie outside the kidney pelvis. If it also lies outside the kidney in either the gallbladder film or the kidney film a calculus in the pole of the kidney will be ruled out, as a stone in this location must of necessity be associated with the kidney shadow in all exposures. It should always be borne in mind, however, that a patient may have both gallstones and a right kidney calculus.

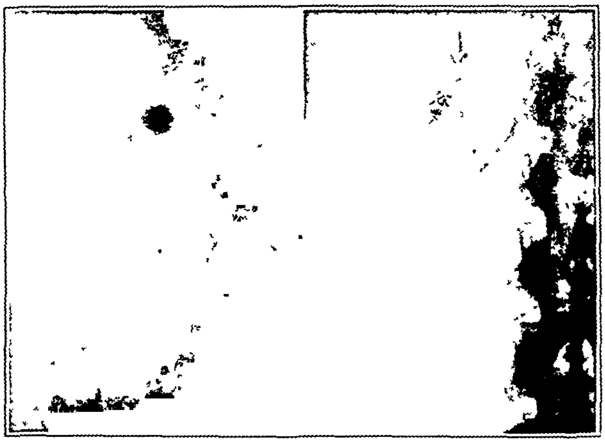


Fig. 5.—Posterior-anterior and anterior-posterior views of gallstones

Some method for the establishment of a diagnosis in cases of stones of no greater density than the surrounding kidney tissue is a very important phase of the diagnosis of kidney stones, especially in every case in which the clinical and urinary symptoms indicate a possible kidney calculus, although the usual roentgen-ray examination of the kidney has been reported negative (Fig. 9).

I have found that this can be accomplished by pyelography of the suspected kidney, the roentgenogram of which will show areas in the pyelogram of lesser density than that of the usual 15 per cent. sodium iodid solution used for the injection, and by their definite outline these areas will not be confused with incompletely filled pelves, blood clots in the kidney pelvis or tumors of the kidney.

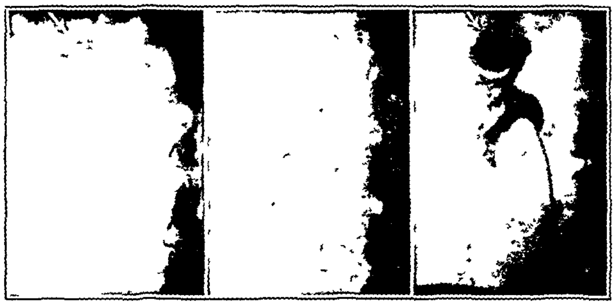
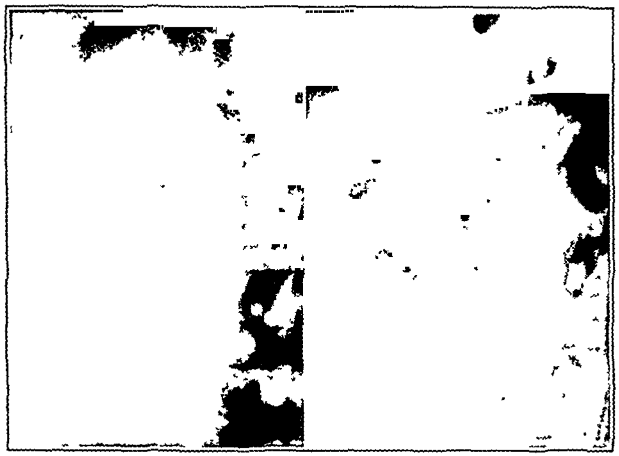


Fig. 6.—Anterior posterior and posterior anterior views of kidney stones, with pyelogram showing location of stones in the kidney pelvis.

Pyelography, in fact, is one of the most important aids to the study of kidney stones and to the establishment of their differential diagnosis. Associated conditions in the kidney, such as hydronephrosis or urinary retention, may be determined by pyelography alone, or combined with a function test. A large pyonephrosis or hydronephrosis, in the presence of a long history of kidney stone, will be the deciding factor in determining whether or not a nephrectomy should be done.



A B

Fig. 7.—*A*, anterior-posterior view of kidney stones with pyelogram; *B*, location of stones

For a long time I have felt not only that a stone in the kidney should be verified by the loss of its shadow in the pyelographic medium which shows it to be within the kidney, but that a definite location of the stone should be made. It seemed probable that this could best be accomplished by using a solution of the opaque salt of a concentration that would permit the shadow of the calculi to be seen as a denser shadow through the pyelographic shadow. In order to determine the proper solution for this purpose, I placed kidney calculi in a quantity of solution corresponding to the usual capacity of the kidney pelvis, and submerged this in a water phantom of a depth equivalent to the depth of the kidney in the average patient. From roentgenograms made from this experiment, I found that when a water phantom 8 inches in depth and a stone of average density were used with a 3.5 per cent. solution of sodium iodid, a fair shadow of the solution was obtained, and the shadow of the calculi could also be easily seen (Fig. 10). A 7 per cent. solution completely obscured the stone. I realize that variations in the density of calculi, the depth of the kidney in individual patients, and the quantity of solution required to fill the pelvis, will make it necessary to vary the concentration of the solution somewhat for individual cases. This procedure is of great aid to the surgeon, as his method of approach for the removal of a stone can be made more readily and with greater precision if the location of a calculus in the pelvis of the kidney or in a calix has been definitely determined before operation.

I have not as yet had the opportunity to use this method in a large series of cases, but I feel that it will prove to be a valuable radiologic procedure in the study of kidney stones.

ABSTRACT OF DISCUSSION

Dr. L. T. LeWald, New York: I did not notice whether Dr. Nichols gave age incidence or not, but I have recently been interested in several cases in children of bilateral calculosis of the renal pelvis. I wonder whether he has had any cases in children as young as 3 years, and if so, what was done? We have one such case now. There have been various opinions expressed as to whether to leave the case alone surgically or whether to attempt removal of the stones. One urologist has very definitely stated that he thinks the child will survive longer without operative intervention. I, myself, feel that in some adult cases with bilateral calculi a successful outcome has been obtained by first removing the stone on the side that has less function, and after that kidney has been somewhat more restored to normal function, if that were the case, then attempting the removal of the calculus on the opposite side. I have seen a case, also, of calcification in a thrombus in the renal vein. This led to considerable confusion in diagnosis, being on the right side and in a jaundiced patient. We were cautious and suggested that, while it had the appearance in many ways of a biliary calculus, operative intervention had better be delayed until a pyelogram had been made. However, on account of the condition of the patient from the jaundice, immediate operation was undertaken with an anterior incision. The gallbladder was explored and found normal. The patient had some catarrhal obstructive jaundice and other serious complications, and died a few weeks later. The necropsy revealed a laminated concretion in the renal vein. In connection with the differential diagnosis postero-anteriorly and the reverse, I should like to ask Dr. Nichols whether he uses a standard, rather short distance in order to bring this out. If one uses a long distance, the shadows will not be proportionately different in their size, and I think that is a point to be borne in mind. Possibly, he uses a short distance to bring that out very distinctly, as shown in several of his cases. I should also like to ask whether the method of attempting to show stones of lessened density in the pelvis of the kidney might not also at times reveal a tumor or a blood clot or some other condition of the pelvis besides calculus.

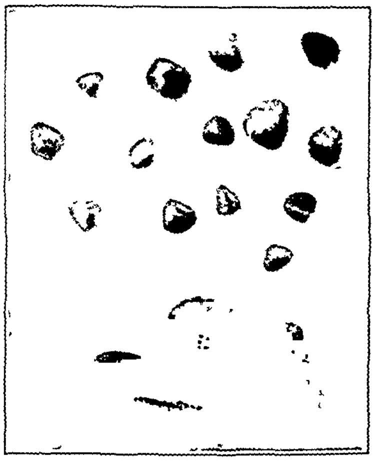


Fig. 8.—Stones removed at operation.

Dr. Daniel Eisendrath, Chicago: Our statistics as to the frequency of bilateral calculi agree with those of Dr. Nichols. Experience during the last ten years has taught the value of conservative operations and the necessity of limiting considerably the indications for operation. We refrain from operating if there are multiple calculi in both kidneys, unless one is located so as to block the outlet of the renal pelvis and interfere greatly with the function of that kidney. In the case of calculi in one or both ureters and also in one kidney, it is advisable to remove the ureteral calculi by nonoperative or operative means before the kidney operation is undertaken. A branching calculus or multiple calculi, filling more or less completely the pelvis and dilated calices, should either be left in situ or a nephrectomy considered, because we have very little to offer to prevent the reformation of calculi. Such a recurrence takes place in from 15 to 20 per cent. of all cases; hence we must give a guarded prognosis as to recurrence. The one positive indication for operations is when a single calculus blocks the outlet of the renal pelvis. We can employ the conservative operation of pyelotomy in nearly every case. I should like to emphasize the necessity of search for ureteral stricture or obstruction by an accessory vessel in every renal calculus case. In regard to the not infrequent concomitant occurrence of biliary and renal calculi, our experience agrees again with that of Dr. Nichols. Cholecystography and pyelography are indispensable aids in the differentiation of shadows due to biliary and renal calculi. Dr. Nichols' method, of using a 5 per cent. sodium iodid solution as a contrast medium in pyelography when the shadow is a very dense one and a more concentrated solution (12 per cent.) when the shadow is faint, is a very valuable contribution. It is easy to overlook calculi which give only a light shadow, and here the stronger solution often intensifies the shadow. We are able today, thanks to such methods as pyelography, to localize the shadow in respect to our plan of operation, whether it shall be a pyelotomy alone or a small nephrotomy, or the two combined. Much unnecessary injury to the kidney is thus prevented. Filling the pelvis and ureter with an opaque medium enables us to determine the degree of injury these structures have suffered and to understand why a calculus shadow can, at one sitting, be found in the renal pelvis and at the next one at the lower end of a greatly dilated ureter. These migrating calculi lead to many difficulties, unless a preoperative diagnosis has been made of the existence of marked dilatation of the ureter and the renal pelvis.

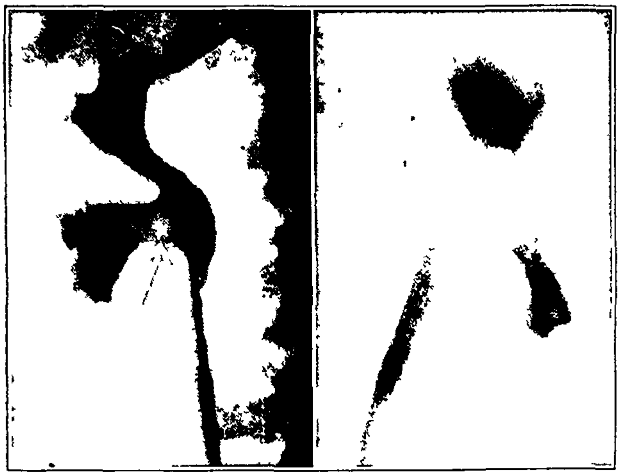


Fig 9.—Two cases of kidney calculi, in each of which the stone was of approximately the same density as the surrounding tissue.

Dr. Henry K. Pancoast, Philadelphia: I should like to ask Dr. Nichols whether he has had any experience with cases in which there was a stone on one side but pain on the opposite side. A few years ago this was considered possible in a definite percentage of cases. Now that our technic is so much improved, it is possible that this does not occur. Formerly we were missing a small stone on the pain side, or other procedures which now find some other lesion.

Dr. Edward S. Blaine, Chicago: I should like to ask Dr. Nichols whether he makes use of the lateral projection in the differentiation between gallstones and right kidney stones. An able presentation on the subject of gallstones by a British roentgenologist of large experience set forth forcibly this particular differential diagnostic procedure as being of greatest value. I should like to know whether Dr. Nichols uses it and if so whether he finds it of sufficient value to recommend it.

Dr. Dudley Mackey, Bloomfield, N. J.: We had a case of a kidney with three distinct pelvises. The first roentgenogram showed a large kidney. It was then decided to inject the kidney. Before injection three plates were made posterior and three anterior with no stone shadow in evidence. Care was used in the inspection of all plates to locate the shadow of the stone. Further examination showed a definite shadow but was not conclusive until the kidney was injected. By actual measurement of the shadow seen in the pyelogram, the stone was demonstrated. The other kidney in the same patient had two pelvises with distinct shadow suspicions of a stone, yet this was not positive until the pyelogram was made.

Dr. B. H. Nichols, Cleveland: As to the treatment of bilateral stone in a child of 3 years, I think it would depend on what the urinary symptoms showed. That is rather a decision for the surgeon to make. Our youngest patient with bilateral stone was 5 years old. If there were no urinary symptoms, that is, no hematuria or pyuria, I think it would be safe to delay operation for a time. We make our gallbladder and kidney films at a rather short distance, so that the variation in the size in the two positions is increased. Answering Dr. Blaine's question, we have given up the lateral view because if the tube is not exactly over the shadow, it will be carried one way or the other, as it is a considerable distance to the plate and it is difficult to show a stone through the patient laterally. Dr. LeWald's point is well taken, that when one sees a deformity in the kidney pelvis it might be a small papilloma in the kidney, which would give a rounded shadow and would look like a kidney stone. One cannot make a positive diagnosis of stone, but in the majority of cases blood clots and deformities of the kidney pelvis will not be misleading because one will see that the shape of the shadow corresponds to the same type of branching that we see in stones, or unless one sees a definitely rounded stone. By the law of probability, stones occur more often than papillomas. In answer to Dr.

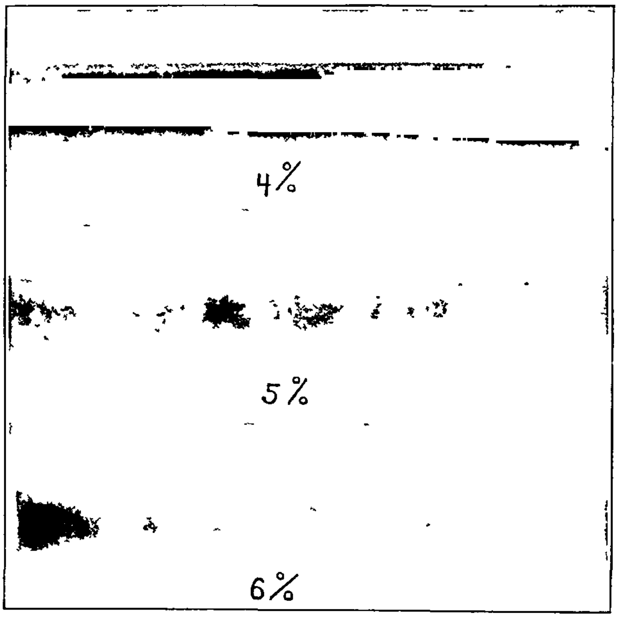


Fig. 10.—Water phantom study of calculi in sodium iodid solutions of varying densities.

Pancoast's question about pain on the opposite side, that is now, I think, almost negligible. Occasionally we see such a case, but it is of little importance, because the vast majority of patients with kidney stones have pain and tenderness on the side in which the stone is present.

ROENTGEN RAY IN THE DIAGNOSIS OF PERFORATED PEPTIC ULCER *

R. T. VAUGHAN, M.D.
AND
WILLIAM A. BRAMS, M.D.
CHICAGO

Air, free in the peritoneal cavity, has long been considered a valuable sign in the diagnosis of perforations of the gastro-intestinal tract, but this important sign has not gained the popularity that it deserves because of the uncertainty with which its presence was formerly elicited by percussion, particularly when the air was present in small volume.

The possibility of demonstrating free intraperitoneal air by the roentgen ray suggested itself to us as a more accurate and reliable method than by percussion of the liver dulness. There was also the possibility that the air could be visualized at a much earlier stage after perforation than by the older method. A study of the literature on this subject revealed several brief references to the roentgen-ray detection of air in the peritoneal cavity, but no reports could be found in which the sign was studied in a large series of cases in relation to the incidence and time of appearance after the perforation occurred.

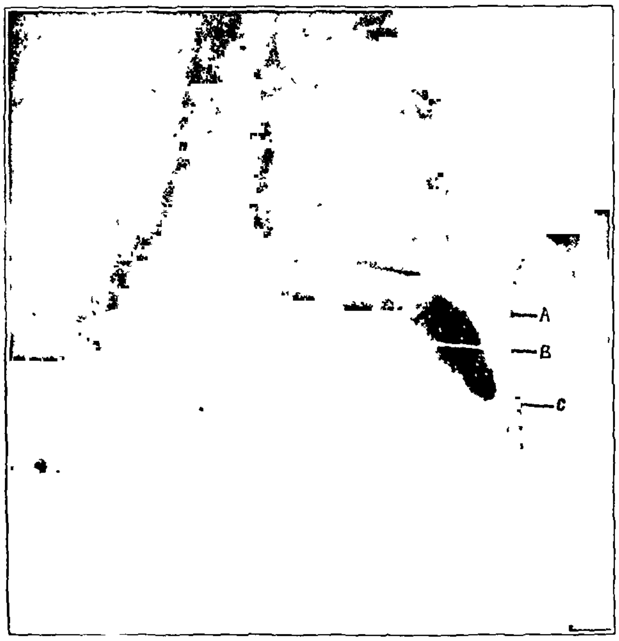


Fig 1.—Spontaneous pneumoperitoneum between diaphragm, *A*, and upper surface of liver, *B*, *C*, horizontal fluid level.

Cases of ruptured gastric and duodenal ulcers in which the intraperitoneal air was visualized with the roentgen ray were reported by B. Bager, H. Schottmuller, H. A. Dahm, W. Weiland, and H. Wessler and L. Jaches. These authors reported only one or two cases, and H. Assmann, who described four such instances, gives only scant attention to this sign. G. H. Copher recently reported a series of five cases of ruptured ulcer in which it was possible to visualize air in the peritoneal cavity. In a previous communication we reported a series of fifteen cases of proved acutely perforated gastric and duodenal ulcers, in thirteen of which free intraperitoneal air could be seen with the fluoroscope. This intra-abdominal air is not limited to perforated peptic ulcer but may occur after rupture anywhere in the gastro-intestinal tract. R. Reinecke reported a case of gangrenous appendicitis that had ruptured and that had resulted in subphrenic abscess in which free air was seen between the diaphragm and upper surface of the liver. This zone of air was seen in the foregoing location when the patient was in the upright position and disappeared when the posture of the patient was changed. L. Kenez found a similar picture after a perforation of a tuberculous ulcer of the small intestine, and a similar result was obtained by H. Popper after a rupture of the bowel.

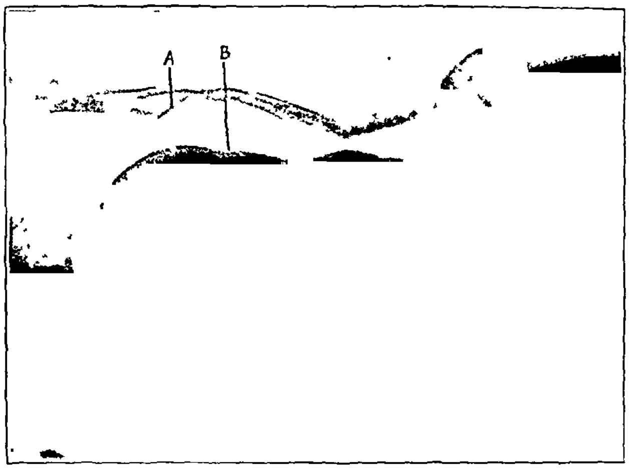


Fig. 2.—Patient on left side, showing free air between lateral wall of abdomen, right surface of liver, *B*, and diaphragm, *A*.

These few reported observations in which free intraperitoneal air was found after perforations of the gastro-intestinal tract other than of the stomach or duodenum do not detract substantially from the value of the sign in perforated peptic ulcer, as all of the conditions in which the phenomenon was observed proved to be surgical emergencies demanding immediate operation. The practical importance of this sign lies in the fact that, while it may occur in any perforation of the gastro-intestinal tract, the vast majority of these perforations occur either in the stomach or in the duodenum. Our own observations include a number of cases of perforated appendicitis that were examined by fluoroscopy, but we were unable to observe free intraperitoneal air in any of them.

Our material consists of twenty-nine cases of acute perforation of gastric and duodenal ulcer, all of which were examined by fluoroscopy as well as by the other usual method before operation. All of them were proved to be perforated ulcer of the stomach or duodenum, either at operation or at necropsy. The method of fluoroscopic examination is very simple and requires no preparation or use of a contrast meal. The patient may remain on the hospital cart during the examination, and the entire procedure need not take more than a few minutes. There is no danger or discomfort to the patient, no delay to the operation, and the information gained is well worth the effort exerted in eliciting this sign.

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* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

The visualization of the intraperitoneal air is possible in the early stages because the air seeks the highest point in the abdomen so that with the patient in the upright position, either sitting or standing, the air bubble will be observed between the under surface of the diaphragm and the upper surface of the liver. The same principle enables us to see the air between the outer surface of the liver and the right abdominal wall when the patient is on his left side, and between the spleen and the left abdominal wall when he is on his right side. We have been able to see the air bubble in the pelvis by placing the patient in the Trendelenburg position. It is not necessary, however, to turn the patient to all these positions, as one or two postures will be quite sufficient. We have found the dorsal and left lateral positions sufficient for diagnosis, and we have often employed the sitting posture without discomfort to the patient. It is frequently possible to detect a fluid level if both air and fluid are present, and a splashing may be detected if the patient is shaken. The origin of the air seen in the peritoneal cavity in these cases is from the stomach and comes from the gastric "air bubble" normally present in this organ. But little air, a few cubic centimeters, is all that is required to be visualized by the fluoroscope as it all tends to collect in one place. The fact that the air is free in the peritoneal cavity and the characteristic outline and location of this air may be determined by changing the position of the patient, when it will be observed that the air bubble shifts from its previous location to the highest point in the abdomen as determined by the new position.

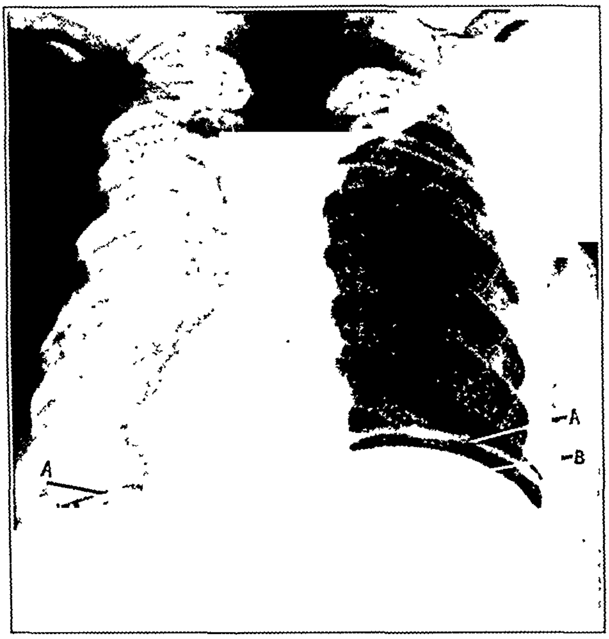

Fig. 3.—Patient in upright position, showing free air between diaphragm, *A*, and upper surface of liver, *B*, on right side, and between diaphragm and abdominal viscera on left side.

The free air as described was seen in twenty-five of the twenty-nine cases so studied, or in 86.2 per cent. of our series. Most of the cases were of a few hours' standing, and one case showed a distinct air zone two hours after the occurrence of the perforation. The value of this sign lies, therefore, not only in the fact that it aids us to recognize acute perforation of a gastric or duodenal ulcer but also in that it enables us to make a very early diagnosis, thus permitting the surgeon to operate earlier and giving the patient a better chance for recovery.

SUMMARY

1. Free air in the peritoneal cavity is pathognomonic of gastro-intestinal perforation and was found on fluoroscopic examination in 86.2 per cent. of a series of twenty-nine proved cases of acute perforation of gastric or duodenal ulcer.

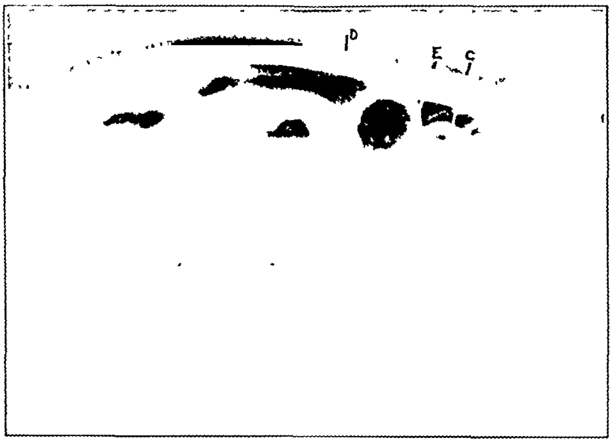

Fig 4.—Patient in supine position, showing free air between anterior abdominal wall, *D*, coils of intestine, *E*, and fluid level, *C*.

2. This free air is easily seen on fluoroscopic examination without previous preparation or use of a contrast meal.

3. The sign appears in the earlier stages of perforation and was present two hours after the onset of the trouble in one of our cases.

4. The free air is recognized by observing a narrow, sickle shaped zone of freely shifting air between the viscera and the abdominal wall or between the diaphragm and the upper surface of the liver. The air changes location with change of posture of the patient.

5. The procedure is apparently without harm and does not produce discomfort to the patient. The information gained is easily worth the few minutes that it takes to examine the patient in the manner described.

6. The sign is not offered as a substitute for the diagnostic procedures usually done in these cases, as a diagnosis can be made in most instances on the history and physical examination. The sign is offered as a valuable addition to our diagnostic armamentarium in the recognition of acutely perforated gastric and duodenal ulcer, because it is practically pathognomonic.

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ABSTRACT OF DISCUSSION

Dr. John D. Dunham, Columbus, Ohio: The speakers called attention to a very important addition to our methods of diagnosis. The interpretation of these methods offers difficulties in certain instances; for example, in paralytic ileus the differentiation of air within and outside the intestine would be somewhat difficult. There are objections in the way of interpretation that might be mentioned. One case in particular illustrates the point: A young woman was brought into the hospital with acute abdominal pain, some distention and a rigid abdomen. The history justified the conclusion that she had undoubtedly rupture of one of the viscera of the stomach or of the duodenum. Free air in the peritoneal cavity was demonstrated by a roentgenogram. At the laparotomy, it was found that there was an opening in the uterus. A metal catheter had been used to produce abortion. A patient with symptoms of rupture from gastric or duodenal ulcer, when first seen by the physician, has usually been ill for some time. Further time must elapse before the patient reaches the hospital or the roentgenologist. The question arises as to whether this method of examination does not dangerously delay surgical intervention. Is it not true that change of posture is liable to introduce more than air into the abdominal cavity? The percentage of recoveries in the treatment of ruptured viscera depends on the speed with which operation is undertaken. It occurs to me that, unless a patient is seen within one or two hours after the onset of symptoms, the older methods of observation must be depended on, such as history taking, palpation and leukocyte count, in order that the patient may not be unduly held off from treatment.

Dr. R. T. Vaughan, Chicago: We have already stated that operation is not delayed by this procedure. On the way from the ward to the operating room, the patient passes the roentgenray department, where he is run before the fluoroscope while still on the hospital cart. Not five minutes is required for this examination, whereas it takes our nurses usually from twenty to thirty minutes to get the operating room "set up" for an emergency operation. What do we do with the 15 per cent. of cases that show no gas bubble? In most of them, especially those with severe symptoms and well marked signs, the diagnosis can be made readily without the gas bubble, as it can, too, when the bubble is present. In some cases the diagnosis is made only by exploratory laparotomy, when the symptoms present justify no further preliminary diagnosis than an acute surgical condition of the abdomen. There are occasionally cases of perforation with still milder symptoms, and it is difficult or impossible to say whether they are surgical or nonsurgical at first examination. On three patients in whom one of the diagnostic possibilities considered was perforated ulcer, either very tiny or secondarily closed by omentum or food particle, I have tried a new procedure with a positive result in one case. As fluoroscopy showed no free gas bubble, on admission to the hospital the patient was put in the lateral position for several hours. In this position the gastric gas bubble lies in the pyloric portion of the stomach and all gastric fluid in the cardia and fundus. If a pyloric or duodenal perforation is present, only gas should escape from it, and the danger of leakage of fluid through the perforation should be minimal. After the lapse of eight hours, a tiny but unmistakable peritoneal gas bubble was discovered in this patient. Laparotomy was immediately performed, the tiny gastric perforation opening closed, and the patient saved. This patient's temperature was only a trifle over 99 F.; leukocyte count was 10,000; there was abdominal discomfort rather than actual pain, and there was only a suggestion of rigidity. The other two patients recovered without operation or a gas bubble being discovered, so that the exact diagnosis in their cases is not known.

Rubber Gloves.—The wearing of sterilized rubber gloves when operating is the greatest improvement in surgery since Lister discovered the cause of sepsis.—Sir John Bland-Sutton, President, Royal College of Surgeons of England.

ADENOMATOSIS, OR THE DIFFUSE ADENOMATOUS GOITER *

J. EARL ELSE, M.D.
Assistant Professor and Chairman, Executive Committee, Department of Surgery, University of Oregon Medical School
PORTLAND, ORE.

Under the term adenoma, there is described in the literature two definite distinct pathologic entities, adenomatosis, or the diffuse adenomatous goiter, and true adenoma, which is a definite encapsulated growth beginning from a single point and answering all the requirements of the benign tumors.

Adenomatosis of the thyroid is characterized by a diffuse new formation of acini usually involving the entire thyroid gland, beginning with the fetal type without secretion, but later assuming the adult or colloid type, and giving rise to no symptoms at first, but later to those of pure hyperthyroidism.

Wilson, in 1913, briefly described this condition and applied the term adenomatosis. Goetsch, in 1920 and 1921, described the early stage under the term diffuse adenomatosis, but referred to the new formation of acini as "an abortive attempt at the formation of young small alveoli." Plummer, in his writings, has grouped adenomatosis with the adenomas, treating them as a single entity. In addition to these references, I have referred to this condition in several communications, but up to the present there has been no description of the disease tracing it through its entire course.

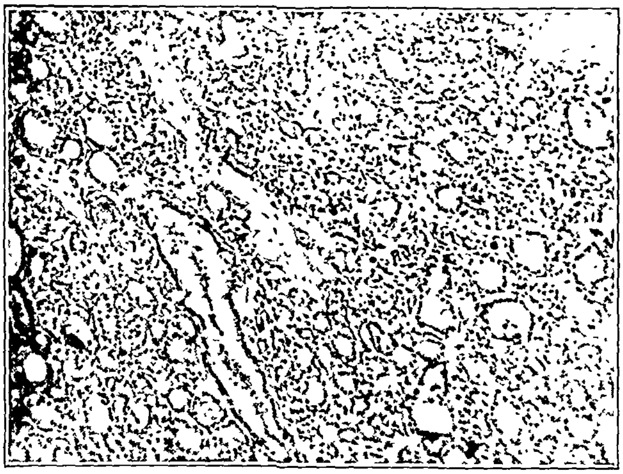

Fig. 1.—Early adenomatosis: thyroid only slightly enlarged, with no nodules; diffuse new formation of acini; fetal and adult acini present throughout thyroid.

PATHOLOGY

The pathologic picture varies with the stage of the disease.

Early Adenomatosis.—The thyroid gland is moderately enlarged, the surface is smooth, and the consistency is somewhat increased over the normal. On section, the cut surface presents a more dense appearance than in the normal gland; and, while some colloid is present, there is not the same semitranslucent appearance characteristic of the normal thyroid. In the early stage the gland is homogeneous, and nowhere is there to be seen any tendency toward nodular formation. On microscopic examination (Fig. 1), it is found to contain both fetal acini and apparently normal or colloid acini. Between these two types of acini are found all possible variations, the appearance being indistinguishable from that of the mixed adenoma. In other fields there may be an apparent increase in the interstitial cells. In some areas these cells are arranged in masses, many of them showing the definite beginning of acinus formation. It was these areas that Goetsch referred to as being abortive attempts at the formation of young small alveoli. A study of a series of cases, however, demonstrates that this is not an abortive attempt, but is instead the real beginning of the new acini.

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* From the goiter clinic of the University of Oregon Medical School and the pathologic laboratory of Good Samaritan Hospital.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

Late Adenomatosis.—The gland shows a marked enlargement. The surface is more or less lobulated, often with very definite nodules projecting. On cut section (Fig. 2), the nodular arrangement is still more manifest. On close observation, these nodular masses are seen to be made up of groups of acini distended with colloid. Many of these masses have a thin, membranous capsule and can be enucleated, presenting an appearance not unlike that of an adenoma, but differing from an adenoma in that the capsule is only a thin membrane instead of the well developed capsule of the adenoma (Fig. 3). Between these nodules is found compressed thyroid tissue. In some places degeneration has taken place, while in other areas there may be marked connective tissue proliferation, marking the site of a former degenerative process or a hemorrhage. Sometimes cystic formation is present, while hemorrhagic areas, either into some of the nodules giving a sharply circumscribed hemorrhagic mass, or infiltrating between the nodules, may be found. On microscopic examination of the colloid nodules, the picture is very similar to that seen in a colloid adenoma. Sections made from the tissue between the nodules often show the same type of structure, differing only in the amount of colloid present in the acini. Solitary lymph follicles may be found.

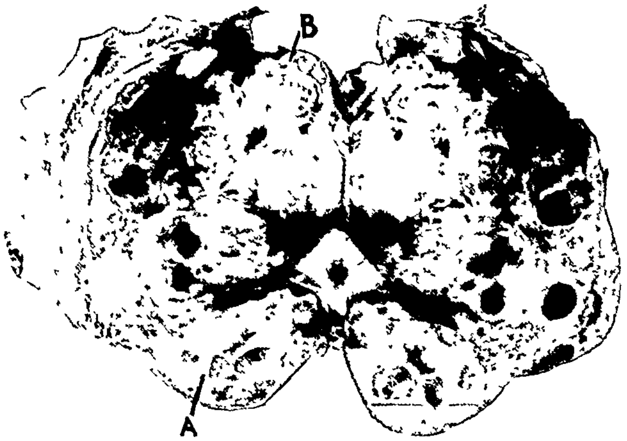

Fig 2 —Adenomatosis cut surface showing adenomatous nodules *A* unencapsulated nodules, *B*, nodule with thin capsule, to be contrasted with Figure 3

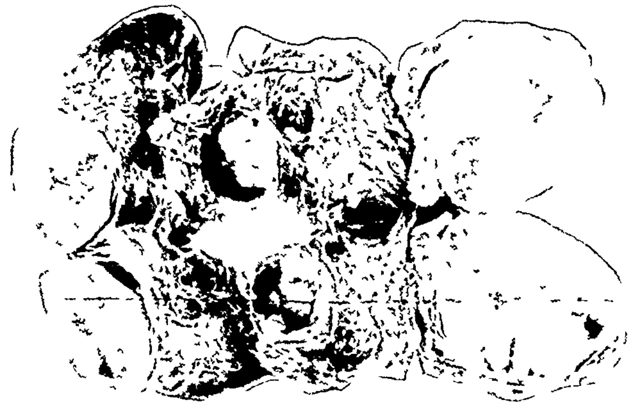

Fig 3 —Multiple adenomas three adenomas in one lobe; definitely encapsulated Difference from Figure 2 may be noted.

The blood supply in adenomatosis is increased, and in many cases there is a very definite increase in the collateral circulation.

PATHOGENESIS

It is impossible to trace any one given thyroid gland through its course from the beginning new formation of acini to the development of colloid adenomatosis, but by studying a series of cases, the method of development can be fairly well ascertained. The very first evidence of the beginning of an adenomatosis is the formation of undifferentiated cells in masses (Fig. 4). These cells are probably identical with those described by Wolfler as interstitial cells. They do not differ from the appearance of the cells seen in the beginning of the development of new acini within old acini, as seen in compensatory hyperplasia (Fig. 5). Just as in well developed compensatory hyperplasia one sees in the center the undifferentiated cells, external to this the fetal acini, and next to the wall of the parent acini the colloid acini, so in adenomatosis (Fig. 6) one finds first a group of the undifferentiated cells, then the newly formed acini of the fetal type, and then the acini that are taking on the power of secreting colloid. From this stage the process goes on to the stage at which the acini are overdistended with colloid In some areas the development becomes more rapid, pushing the neighboring acini to one side, thus giving an appearance similar to that seen in adenomas, but differing in that there is either no capsule at all or usually only a thin membranous capsule. Sometimes there is a fairly definite capsule about some of the nodules, but rarely does it attain a thickness or appearance resembling that seen in the adenomas.

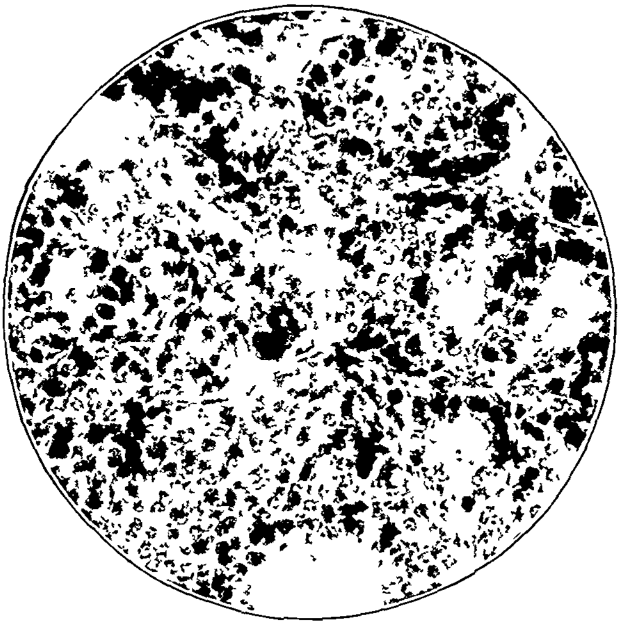

Fig 4 —Adenomatosis, showing transition from undifferentiated cells to fetal acini.

Taking the picture as a whole, it gives one the impression of a diffuse new acinous formation in which certain areas have developed more rapidly than others, thus producing the nodular effect.

The origin of the cells from which the new acini spring is not known. A study of a series of cases of adenomatosis suggests three different theories: (1) congenital; (2) origin from the Wolfler or interstitial cells; (3) a hyperplasia of the cells lining the normal acini.

According to the first theory, either the acini are present at the time of birth, being an abnormal fetal development, or else there are present certain undifferentiated cells at birth not normally found in the thyroid gland from which the acini develop. According to the second theory, the new acini form from the interstitial cells of Wolfler, which are normally found in the thyroid gland. The function of these cells is not definitely known, but it may be that they are for the purpose of regeneration in thyroids that have been partially destroyed or removed, or in thyroids secreting an insufficient amount of thyroxin. In other organs, the regenerative ability is usually present. In the liver, for example, where there has been a slow destruction of the liver lobules, as in cirrhosis, there is often a new development of liver substance in adenomatous-like masses sufficient to carry on the liver function so long as the blood supply is not interfered with. This new formation in the liver probably develops from the bile radicles. The thyroid gland, not having ducts through which the secretion may be discharged and from which regeneration may take place, may have instead the so-called interstitial cells for this purpose, and from these, according to this theory, may come a diffuse atypical acinous formation.

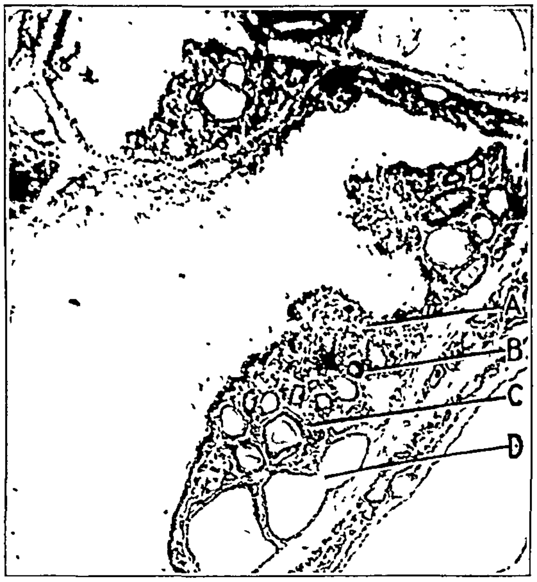

Fig 5 —Compensatory hyperplasia, showing manner of the development of new acini within old acini: *A*, undifferentiated cells; *B*, fetal acini; *C*, intermediate cells; *D*, adult acini.

The third theory is that a new formation of acini similar to that seen in compensatory hyperplasia may develop from the cells lining the old acini, but outside the walls of these acini instead of inside, as in compensatory hyperplasia.

It would appear from the glands studied that the theory that these new acini develop from the interstitial cells was more tenable than any other theory; however, without the opportunity of studying a large number of thyroid glands of children or of the age of adolescence, one cannot be certain that there may not be some which show the characteristic findings of adenomatosis from birth. Accepting the theory of the development from the interstitial cells as being correct, the source of the interstitial cells is the next problem in pathogenesis. These may be congenital, put there for the purpose of regeneration, as stated, or it may be that they spring from the epithelial cells of the acini.

ETIOLOGY

Three theories of causation are apparent: (1) that it is congenital; (2) that it develops from uncured adolescent goiter; (3) that it is developed as the result of a stimulus from the mild hypothyroidism due to iodin deficiency in the food and drink intake.

1. The congenital theory has already been discussed under pathogenesis.

2. The patients having adenomatosis that I have seen may be divided into three groups so far as a history of adolescent goiter is concerned. The first group, by far the largest, gives a history of having had an adolescent goiter. The second group is uncertain whether a goiter was present or not during the adolescent period, and the third group, which is the smallest, is certain that there was not a goiter; but many if not all of these patients may be mistaken. The adolescent goiter probably leaves the thyroid in a somewhat atypical state with a reduced reserve, so that when increased demand is thrown on the thyroid gland in later life the changes characteristic of adenomatosis take place. Patients with other forms of goiter in adult life gave the same history regarding adolescent goiter; hence, it appears probable that an uncured adolescent goiter may predispose to the development of all types of adult goiter.

3. It is known that mild hypothyroidism due to a deficient iodin intake may result in: (1) an oversecretion of colloid, for the thyroid in its attempt to secrete more thyroxin may secrete too much colloid; (2) a hyperplasia of the cells within the acini, as seen in hyperplastic adolescent goiters, in which the hyperplasia may be either diffuse or localized and in the latter case often mistaken for adenomas, and (3) the new formation of acini, as seen in compensatory hyperplasia. To summarize our knowledge of the etiology, it would seem that a simple nontoxic goiter, as the goiter of childhood, the adolescent goiter, or the colloid goiter of adult life, but more especially the adolescent

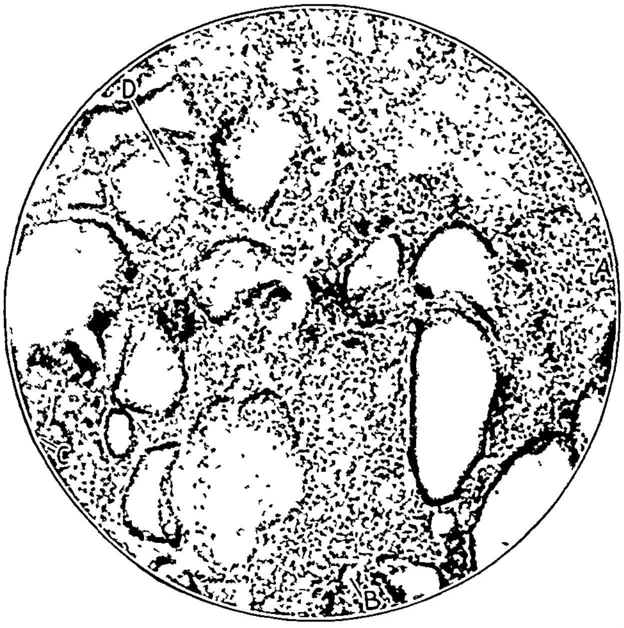

Fig 6 —Adenomatosis: *A*, undifferentiated cells; *B*, beginning fetal acinus formation; *C*, intermediate acini; *D*, adult acini

goiter, predispose to the development of adenomatosis, and that an iodin deficiency in the food intake is an important factor.

SYMPTOMATOLOGY

Early in the development of this disease, the only evidence of the presence of an adenomatosis is a slight enlargement of the thyroid gland. It is probable that considerable time elapses between the beginning of the adenomatosis and the beginning of the symptoms in those that become toxic, the same as occurs in true adenomas. The onset of the symptoms is insidious, so that the patient does not come seeking treatment until the symptomatology has become fairly definite. At this time the most frequent complaints are tiring easily, nervousness, shortness of breath, tachycardia and palpitation. The appetite is usually very good, while the weight is variable, some patients losing and others having no change. There is never a history of acute symptoms as seen in exophthalmic goiter. The most common clinical findings are tachycardia, tremor, moderate rise in the basal metabolic rate, moist skin and palms. The size, shape and consistency of the thyroid vary with the stage of the disease.

Early the gland is only moderately enlarged and smooth; later it may be markedly enlarged and nodular. The largest goiters that we have seen belonged to this type. Increase in the systolic pressure occurs, followed gradually by an increase in the diastolic. The blood pressure of adenomatosis, like that in toxic adenomas and compensatory hyperplasia, differs from that in exophthalmic goiter in that the diastolic pressure is usually not lowered or, if lowered, is lowered but slightly, while the systolic pressure rises, thus giving an increase in the pulse pressure characteristic of toxic goiter. With the development of tachycardia and hypertension, cardiac hypertrophy takes place.

DIAGNOSIS

The diagnosis of hyperthyroidism is made on the history of tachycardia and palpitation, increased nervousness, tiring easily, increased sweating, increased pulse pressure accompanying a tachycardia, and an increase of the basal metabolic rate. The differential diagnosis between adenomatosis and toxic hyperplastic (exophthalmic) goiter is made, first, on the history and, secondly on the clinical symptoms. In adenomatosis there is usually a history of a goiter having existed for a considerable time. The onset of the symptoms is insidious. The most common complaints are tachycardia, palpitation, tiring easily and getting out of breath easily. There is a good appetite and usually little disturbance with the weight, unless the patient is seen late in the disease. On physical examination, the goiter is found to be small and smooth and fairly firm early in the disease, and large, soft and lobulated late in the disease. There is an increase in pulse pressure resulting from a rise in the systolic pressure as a late sign. The diastolic pressure rises late in the disease but does not keep pace with the rise of the systolic pressure. Tremor is present. There is no exophthalmos, lagging of the upper lids, or hyperthyroid crisis. The basal metabolic rate is moderately increased, being found usually between a plus 30 and a plus 50.

In the toxic hyperplastic goiter (exophthalmic) as seen in the first attack, there is a definite tachycardia with fibrillation in the extreme cases, well marked tremor, evidence of a loss of weight, and lagging of the upper lids, with exophthalmos in the majority of patients. The skin is always moist, and the palms are sweaty. The patients give a history of being warm without a rise in temperature. Many of them want the living room cooler than other members of the family, and fewer covers at night. In a well marked attack, the basal metabolic rate is fairly high, usually 50 or more. The patients are usually nervous, and many of them talk rapidly. In secondary attacks, the findings are not so definite. There is an increase in the pulse pressure, resulting from a lowering of the diastolic, rather than to a raising of the systolic pressure. The systolic pressure may be normal, below normal or occasionally above normal. The diastolic pressure is rarely above normal.

A differential diagnosis between adenomatosis and toxic adenoma must be made by palpitation of the thyroid, as the clinical manifestations are the same. In the adenomas, there is one or at most two or three definitely isolated nodules. In adenomatosis, at first the gland shows only a diffuse enlargement without any nodular formations. Later the gland presents a lobulated sensation to the examining fingers instead of the definite isolated nodules of adenomas. In some instances in which there has been a rapid development in some areas there may be fairly definite nodules, but these are always accompanied by a more or less lobulated gland.

PROGNOSIS

The prognosis varies with the intensity of the disease and the length of time elapsing after the toxic symptoms develop. The prognosis of cure with proper treatment so far as the hyperthyroidism is concerned is usually good. Early in the disease a good prognosis for the relief of symptoms may be given, but after definite cardiac hypertrophy has developed, after definite hypertension has been established, and after the patient has become distinctly nervous, the prognosis, so far as relief from symptoms is concerned, becomes less favorable.

In the cases showing a marked hypertension, there is practically always a reduction in the blood pressure following operation, but it usually does not go entirely back to normal. A damaged heart muscle remains a damaged heart muscle. A badly disordered nervous system resulting from a prolonged or a pronounced hyperthyroidism may not become entirely normal again. To give a good prognosis, the proper treatment must be instituted early.

TREATMENT

A cure can be obtained in only one way; that is, early adequate removal of thyroid substance. Like all patients with hyperthyroidism, each patient must be carefully studied in order to determine the treatment for that individual. Patients seen fairly early will stand the radical operation well. It has been our experience that because of the increased collateral circulation, ligation of the superior thyroid poles is of little value. Patients in whom the condition is moderately severe are put in bed for a few days previous to operation with an ice collar about the neck, sufficient sedatives, barbital or morphin, to keep them quiet, and digalen, 10 minims (0.6 c.c.) intravenously or intramuscularly every four hours if the pulse is over 120. In the severe cases we use the roentgen ray rather than superior pole ligation to decrease the activity of the thyroid in order to make the patient a safe risk. On the night before the operation, the patients are always given barbital or morphin. There is no preoperative preparation. The patient's rest is not disturbed, even by giving an enema on the morning of operation. If the patient is found excessively apprehensive or nervous, the operation is postponed.

The operation must be a subtotal double lobectomy. We leave only the posterior capsule and a thin layer of thyroid gland adherent to it. If more is left there is danger of recurrence. It is possible with this type of operation that there may be an occasional patient who will show the evidence of hypothyroidism for a short time, but we have never seen such a case. With a careful study of each individual case and with the proper preliminary preparation of the patient, there should be only a very slight mortality.

CONCLUSIONS

1. Adenomatosis is a definite pathologic entity differing from adenoma in that the process is diffuse and does not have a true capsule.
2. Adenomatosis produces a hyperthyroidism of the cardiovascular type.
3. It is important to differentiate between adenoma and adenomatosis because the former requires simple enucleation of the tumor growth, while the latter requires subtotal double lobectomy.

709 Stevens Building

PRESENT-DAY SURGICAL TREATMENT OF DISEASES OF THE THYROID GLAND*

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ROCHESTER, MINN.

In 1866, Samuel D. Gross[1] said:

> When the tumor resists our curative efforts and endangers suffocation, it has been proposed to afford relief by extirpation, but the question arises, is such a procedure proper or justifiable? In a word, can the thyroid, when in a state of enlargement, be removed with a reasonable hope of saving the patient? Experience emphatically answers, "No." . . . No honest and sensible surgeon, it seems to me, would ever engage in it.

Since this declaration there has been prodigious progress in the field of surgery, and probably in no branch has the advance been greater, more rapid or more secure than in that dealing with diseases of the thyroid gland. To have reduced the operative mortality in a period of less than seventy years from a state of prohibitive operative hazard to barely 0.5 per cent. is a record of surgical achievement worthy of just pride.

The evolution of surgical treatment of the thyroid gland has proceeded along two main lines: the perfection of the technic of the operation, and the control of hyperthyroid cases.

From the knowledge revealed by the discovery of the parathyroid bodies and their function, and by the discovery that myxedema resulted from the loss of function of the thyroid gland, through the efforts of many surgeons, notably Billroth, Kocher, Mikulicz, Halsted,[2] C. H. Mayo and Crile, the operative technic was developed and standardized. The perfection of the technic resulted in practically eliminating the danger of operating on goiters without hyperthyroidism. In the Mayo Clinic in the year 1924 there was not a single death following 667 subtotal thyroidectomies in 667 cases of simple goiter.

However, the perfection of the technic solved only part of the problem of surgical treatment of goiter with hyperthyroidism, for in this type of goiter are the additional operative hazards of acute hyperthyroidism and the debility of the patient incident to hyperthyroidism or to the presence of visceral degeneration, which in the past have too often marred the success of the technically flawless operation.

The demonstration by Plummer that "toxic" goiter occurs as two distinct entities, exophthalmic goiter and adenomatous goiter with hyperthyroidism, was not only of academic interest but also of fundamental importance in paving the way for a more rational method of treatment. The additional operative hazards in the two are the same, but each disease had to be attacked along entirely different lines.

EXOPHTHALMIC GOITER

Formerly, the most baffling and discouraging problem in the management of exophthalmic goiter was the frequent occurrence of postoperative hyperthyroid crises. Although many measures have been advocated to check the progress of the reaction when once induced, not one has proved effectual. Fortunately, it was early recognized that hope lay in prevention, and efforts were directed at means of reducing the intensity of the hyperthyroidism and of affording protection to the patient. Thus, it was learned that during certain phases, when the degree of hyperthyroidism is greatest, by substituting minor surgical procedures, such as ligation, at a diminished hazard, the condition of the patient could be so greatly improved thereby that the thyroid gland could be resected later without the risk of an acute reaction. For the same purpose the operation might be divided into many stages. Other means advocated for the rehabilitation of the patient included the application of roentgen rays and radium to the thyroid and thymus glands, injection into the thyroid gland of boiling water and various drugs, such as phenol (carbolic acid) and iodin, and the employment of general measures of rest, high calory diet, forced fluids and the like. Likewise, there were developed numerous refinements in surgical management, comprising chiefly the avoidance of prolonged general anesthesia and the use of special types of anesthetics, the preoperative administration of drugs, such as morphin and scopolamin, and the performance of the operation in the patient's bed, all designed for the protection of the patient.

This advance in the management of patients with exophthalmic goiter had an important and far-reaching effect on the surgical treatment of goiter. Up to this time the relatively high operative risk deterred many patients with exophthalmic goiter from submitting to operation until other methods of treatment had been tried without success, that is, until late in the course of the disease, after the development of visceral degeneration, which in turn definitely handicapped the surgical treatment of exophthalmic goiter by increasing the operative hazard and by diminishing the chance for complete cure. With increasing knowledge of the disease, by the employment of preliminary surgical procedures, and by better care of the patient, the operative mortality was gradually lowered to a point nearly comparable to similar surgical procedures of equal magnitude, so that patients with exophthalmic goiter began to seek surgical treatment before the dis-case had wrought permanent damage. Thus, one of the additional operative risks was partially removed by the patient.

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* From the Division of Surgery, Mayo Clinic.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] Gross, S. D.: A System of Surgery, Ed. 4, Philadelphia, H. C. Lea **2**: 394, 1866.

[2] Halsted, W. S.: The Operative Story of Goiter, Johns Hopkins Hosp. Rep. **19**: 72-258, 1920.

While the results obtained by the perfection of this method of management must be considered a great victory, and at once gave to surgery the leading rôle in the treatment of exophthalmic goiter, there remained several obvious disadvantages and failures in the method itself. In the first place, the method did not completely eliminate the danger of acute postoperative crises, as occasionally and often unexpectedly a death attributable to this cause would quickly supervene on a minor procedure, such as ligation or injection of hot water into the gland. In the second place, it imposed a definite restriction on the operability, as a certain proportion of the patients who have had ligations and are allowed to go home for a period of restoration do not return for the completion of the operation. There are three chief reasons for their not returning: 1. In certain cases, the ligations may fail to check the progress of the disease and the patient dies. 2. In other cases, the improvement is so marked that the patient does not consider the necessity for further surgical treatment until after several relapses, when he has lost the benefit of an early operation. 3. In still others, the patients do not return for financial or other reasons. There are, also, a group of patients admitted in a state of crisis, who die before they can be prepared for operation. Finally, from the standpoint of the patient's comfort and mental strain, not to mention the economic loss, the disadvantages of multiple operations are obvious.

In the Mayo Clinic in March, 1922, Plummer[3] instituted the administration of compound tincture of iodin (Lugol's solution) to patients with exophthalmic goiter under preparation for surgical treatment. Previous to this, the general conception of the nature of the hyperthyroidism in exophthalmic goiter was that the body tissues were saturated with iodin elaborated by the thyroid gland. Hyperthyroidism and hyperiodism were spoken of synonymously, and so the administration of iodin to patients with exophthalmic goiter had seemed definitely contraindicated.

The action of iodin in a case of exophthalmic goiter is not definitely known, but the following is supposed to be the basis: The syndrome of adenomatous goiter with hyperthyroidism is the result of an excessive amount of thyroxin in the tissues, and it can be produced experimentally by the feeding of excessive amounts of thyroid extract or thyroxin to myxedematous patients. In short, adenomatous goiter with hyperthyroidism is pure hyperthyroidism.

In exophthalmic goiter there is the same syndrome with certain additional characteristic symptoms, such as exophthalmos, nervous and gastro-intestinal phenomena, and a tendency toward spontaneous crises. The cause of exophthalmic goiter is not known. Plummer suggests, as an explanation of the development of the characteristic features, that intensive stimulation of unknown source, acting on the entire gland, drives it to the point of producing an active agent, abnormal in quality as well as quantity, which in the tissues of the body causes all the phenomena of the disease. As the normal molecule of thyroxin, discovered in 1914 by Kendall, contains 65 per cent. by weight of iodin, it was natural to speculate as to the possibility of an incompletely iodized molecule, and Plummer conceived the theory that the syndrome of exophthalmic goiter varies with the total amount of a completely iodized molecule, and with the relative amount of the two molecules in the tissues. Iodin is therefore administered on the theory that it will completely iodize the molecule thyroxin.

At first the iodin was used only in selected cases, and administered continuously for short intervals in small doses of from 5 to 10 minims (0.3 to 0.6 c.c.) a day. In most instances clinical improvement and lowered basal metabolic rates were noted, and its value in the preoperative preparation of patients with exophthalmic goiter was early proved; then all patients with exophthalmic goiter were placed under this regimen. There remained the establishment of proper dosage. Occasionally, in the earlier experience, patients who had had iodin preoperatively had marked postoperative reactions, and from a study of these it was learned that the dosage had to be increased and administration prolonged to include not only the day of operation but the immediate convalescing period as well. For the last eighteen months or two years, there has been no noteworthy change in its administration. The dosage is adapted to the patient. The minimal dosage in the milder cases is 10 minims once or twice a day for five days; the average is 10 minims three times a day for from seven to ten days, and the maximal, for patients in a crisis or intensely stimulated on admission, from 60 to 100 minims (3.7 to 6 c.c.) daily until the crisis has subsided. After the crisis, 10 minims is given three times a day for from ten to twenty-one days or longer, depending on the severity of the case and the rapidity of the improvement.

The clinical effect of administering iodin to patients with exophthalmic goiter who are being prepared for operation has been striking. An early change is manifested by loss of conscious nervous tension and stare, and improvement in appetite and ability to sleep. In a few days to a week, the pulse and basal metabolic rates drop, often 30 or 40 points each, and shortly there is an appreciable gain in strength and weight. The improvement is not equal in all patients. In general, the more toxic the patient, that is, the more pronounced the cerebral stimulation and gastro-intestinal irritation, the more extraordinary is the improvement. In the milder cases the benefit is less apparent, and in a small group, with the hard, "trained" goiter of long duration, very little measurable improvement is noted on the administration of iodin. From a study of the course of the disease following ligation when large doses of iodin were administered continuously for long periods, Boothby[4] concluded that, after the marked initial improvement due to the iodin, the condition of the patient becomes relatively stable and no further improvement occurs. Repeated observations on the effect of the iodin administered continuously for a year or longer have confirmed this conclusion, so there is no rational basis for administering iodin in cases of exophthalmic goiter with the expectation of curing the disease.

The preoperative administration of iodin to patients with exophthalmic goiter has a definite and nearly constant effect on the pathologic picture of the thyroid gland. According to Broders, who has had the opportunity to study many hundreds of specimens, the histologic alterations are often diffuse and characterized chiefly by dilatation of the follicles, presenting a "Swiss cheese" effect, a change in the lining epithelium from columnar to cuboidal and even to flat cells, and an increased deposit and thinning of the colloid material.

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[3] Plummer, H. S., and Boothby, W. M.: The Value of Iodin in Exophthalmic Goiter, J. Iowa M. S., **14**: 66-73 (Feb.) 1924.

[4] Boothby, W. M.: The Use of Iodin in Exophthalmic Goiter, Endocrinology **8**: 727-745 (Nov.) 1924; Iodin in the Prevention and Treatment of Goiter, J. Indiana M. A. **18**: 5-8, 1924.

This method of preoperative preparation has had a remarkable and gratifying influence on the results of the surgical treatment of exophthalmic goiter. This cannot be accounted for entirely by the apparent improvement in the condition of the patient or by the lowering of the metabolism, for in the past many patients died after a simple ligation, whose appraisable symptoms had a much better rating than those who now after treatment go through a subtotal thyroidectomy without any reaction.

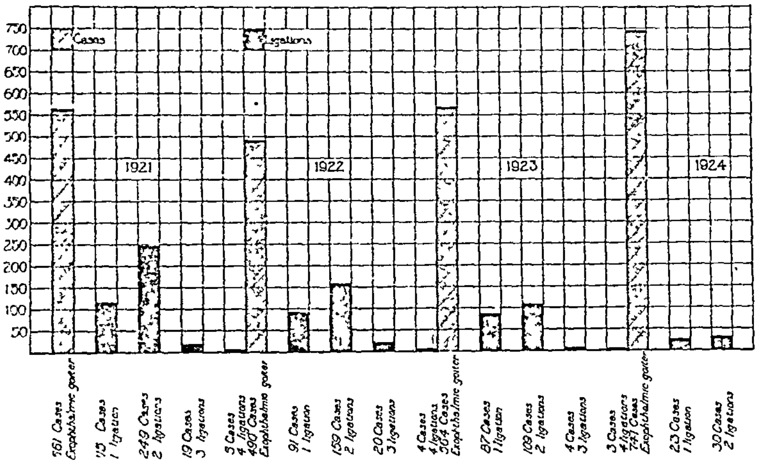

Chart 1.—Yearly cases and yearly ligations

There is a certain phase or status in the course of the disease which, when present, increases the liability to an explosive hyperthyroid reaction, induced often by a trivial stimulus, such as a minor operative procedure or even great excitement. In many instances this status is manifested by intense mental and nervous stimulation or depression and a tendency toward gastro-intestinal upsets, whereas in other instances there are no reliable indications of it, and its presence is not known until the development of the explosion. It is more often associated with high basal metabolism than with a relatively low metabolism. By proper preoperative preparation with iodin, this phase of the disease may be completely dissipated, thereby eliminating the postoperative hyperthyroid crises, so that today the operative treatment of patients with exophthalmic goiter is rid of its greatest hazard, that most feared complication which formerly was potentially ever present to rob the surgeon of the fruits of his labor. However, it should be recognized that in the surgical treatment of exophthalmic goiter there is, besides the danger of the acute postoperative reaction, another hazard, the debility of the patient incident to the acuteness of the disease, or the result of visceral damage. If the latter is marked, the amelioration of the symptoms of hyperthyroidism by iodin treatment will not immediately remove this hazard; therefore, sufficient time should be allowed for the restoration of the patient's strength and weight before major surgical measures are advised.

The degree or intensity of hyperthyroidism should not be the sole criterion on which to base the decision for operation; consideration of the patient's general condition is equally essential. Even if iodin is administered, ligation of the thyroid arteries and a two months' convalescent period may also be indicated in the management of the most severe cases. It is apparent, then, that cautious judgment must still be exercised as to the selection of the time and type of operation for the individual patient. When these precautions are not observed in the management of the greatly debilitated patient, the convalescence may be complicated by the development of pulmonary disorders, congestion, edema and pneumonia, or by infections, such as pericarditis, pleurisy and arthritis, or by general metabolic disturbances.

EFFECTS OF PREOPERATIVE PREPARATION WITH IODIN IN CASES OF EXOPHTHALMIC GOITER

The convalescent period has been materially shortened by the elimination of marked postoperative reaction, so that today the postoperative hospitalization period for patients with exophthalmic goiter is about equal to that of patients with adenomatous goiter without hyperthyroidism. There has been a steady and spectacular decrease in the number of multiple operations with increasing experience with this method[5] (Charts 1 and 2). The proportion of ligations performed at the clinic in 1924, to those performed in 1921, before the introduction of iodin treatment, was 1:11. It can be readily appreciated that the economic advantage to the patient effected by the reduction in the number of ligations has been tremendous. The operability of patients with exophthalmic goiter has been materially extended, as shown by an analysis of the records.

Every year at the Mayo Clinic there are a number of patients with exophthalmic goiter who are in a state of actual hyperthyroid crisis when they are examined, or who develop it shortly thereafter before operation. A certain proportion of these die before operation. The average yearly deaths of patients not operated on for the four years preceding the introduction of iodin was more than fourteen (Chart 3). In 1924, the proportion of these dangerously sick patients admitted was as great as in preceding years, but only two died, and the others improved so much after the treatment with iodin that they were soon accepted for operation, thereby materially extending the operability to a class of patients

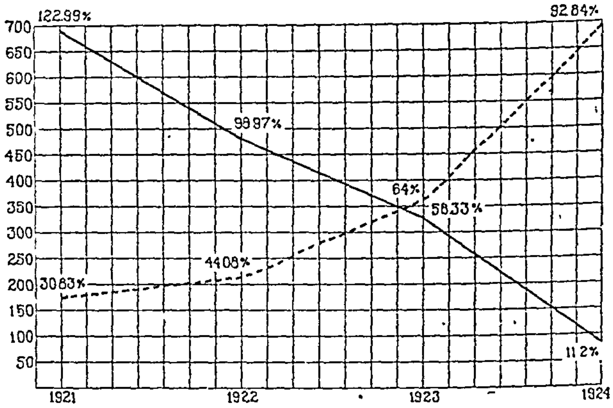

Chart 2.—Increase in percentages and numbers of primary thyroidectomies (broken line) and decrease in percentages and numbers of ligations (solid line).

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[5] The use of iodin was begun in March, 1922.

who had previously died in a crisis on the medical service. Furthermore, of the patients who are allowed to go home for a period of rest after ligation, a certain number, for various reasons, do not return for the completion of the operation. Sufficient data are not available to classify these according to the causes for failure to return. My experience with patients who are temporarily very much benefited by the ligation is that there is a very high percentage of recrudescences. With the diminution in the number of ligations, the number of uncompleted operations in 1923 decreased to less than half (Chart 4). The data available for 1924 would indicate a further diminution in the number of uncompleted operations.

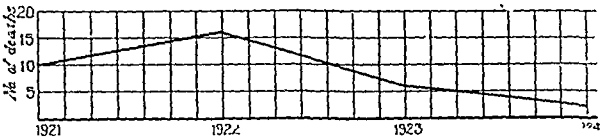

Chart 3.—Nonoperative deaths in cases of exophthalmic goiter from 1921 to 1924

The operative mortality has also been substantially lowered. Thus, for the year 1924 the rate was 0.6 per cent. by operation and 0.8 per cent. by case. It is notable that there were no deaths from preliminary surgical procedures, and furthermore, only one death resulted from an acute postoperative reaction. In this case the goiter was wrongly diagnosed as adenomatous goiter with hyperthyroidism, and no iodin given preoperatively.

ADENOMATOUS GOITER WITH HYPERTHYROIDISM

In order to reduce the mortality in cases of adenomatous goiter with hyperthyroidism, the management must be directed along entirely different lines. The patients in this group might be called the "procrastinating type"; that is, in most instances they do not seek medical relief until the disease has progressed so far that vital structures have been damaged, often beyond repair. We are all familiar with the patient who has had a nodular goiter for many years, but does not consider operation unless by chance the goiter causes choking or marked disfigurement. On an average of fifteen years after the appearance of the goiter, hyperthyroidism develops, but the onset of the symptoms is so mild and insidious that the patient often does not realize any change in his condition and hence does not seek surgical relief until evidence of visceral degeneration has developed, when the operative risk is high and the prospect of complete cure diminished.

Unlike exophthalmic goiter, the course of the disease is steadily progressive and, unfortunately, is not greatly influenced by any preparatory surgical or medical measures. Obviously, the operative mortality is in direct proportion to the number of bad risk cases accepted for operation. Therefore, the mode of attack to reduce the mortality and invalidism caused by this disease lies not so much in the further development of surgical technic or preparatory measures, as in the general education of the public. All nodular goiters should be removed soon after their onset, or the patients should be under periodic medical observation, so that the symptoms of hyperthyroidism may be detected early. As the successful removal of the adenomatous tissue results in the permanent disappearance of the hyperthyroidism within from ten to fourteen days, thereby lifting an extra load from the already disabled organism, the surgical treatment of practically all patients with hyperfunctioning adenomatous goiter, without undue regard to the operative hazard, is amply justified.

In the Mayo Clinic during the year 1924, 370 subtotal thyroidectomies were performed in 370 cases of adenomatous goiter with hyperthyroidism. Four patients died, a mortality of 1.08 per cent.

Surgical Treatment of Thyroid Gland at Mayo Clinic, 1924

	Cases	Mortality*	Per Cent
Goiters not associated with hyperthyroidism	677	..	...
Subtotal thyroidectomies for nonmalignant goiters	645	..	....
Subtotal thyroidectomies for malignant goiters	22	..	....
Excision of specimen, and radium for malignant goiters	10	..	...
Adenomatous goiters with hyperthyroidism thyroidectomy	368	4	1.08
Operations on exophthalmic goiters	878	6	0 68
Primary	678	6	0 88
Returns †	63		
Total	741	6	0 80
Thyroidectomies ‡	745	6	0 80
Ligations	83		
Hot water injections	50		..
Total number of cases with and without hyperthyroidism	1 725	10	0 58
Total operations in cases with and without hyperthyroidism	1,928	10	0 51

* Patients who died in the hospital irrespective of duration of illness or cause of death

† Minor operations on the thyroid gland had been performed previously in the clinic

‡ "Complete" operation in one stage, except in eight cases in which the technical difficulties necessitated a two stage procedure

SUMMARY

In the Mayo Clinic, in 1924, there were 1,928 operations on 1,725 patients with goiter. Ten patients died, a mortality by operation of 0.51 per cent. and by case of 0.58 per cent. There were 677 patients with goiter unassociated with hyperthyroidism, with no deaths; 368 patients with hyperfunctioning adenomatous goiter, with four deaths (1.08 per cent.), and 741 patients with exophthalmic goiter, with six deaths (0.8 per cent).

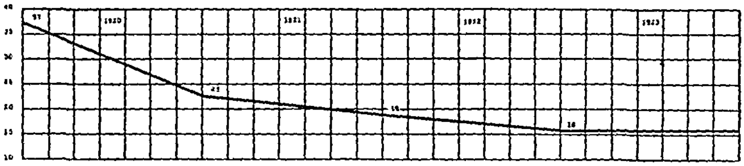

Chart 4.—Number of patients on whom ligation was performed and who did not return for thyroidectomy

This extremely low mortality rate achieved by present-day surgical treatment of the thyroid gland was made possible by the perfection of operative technic and the discovery of means of controlling hyperthyroid crises. The employment of the multiple-stage operation in selected cases, and refinements in management designed for the protection of the patient resulted in a tremendous reduction in the operative mortality and served to establish firmly the surgical treatment of exophthalmic goiter. However, on account of the failure to eliminate the hyperthyroid crises completely, and because of the obvious objections to the multiple-stage operation, this method left much to be desired. The proper administration of iodin to patients with exophthalmic goiter has completely controlled both the spontaneous and the postoperative hyperthyroid crises.

The influence of iodin on the surgical treatment of exophthalmic goiter is shown by the following clearly proved facts: 1. The convalescent period has been definitely shortened. 2. The necessity for multiple operations has been greatly decreased. 3. The limits of operability have been widened. 4. The mortality has been further reduced.

The problem presented by the patient with hyperfunctioning adenomatous goiter is one of procrastination, and the hope of its solution lies in the education of the public to the fact that all nodular goiters are potentially dangerous and should be removed unless the patient is kept under periodic medical observation.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. ELSE AND PEMBERTON

Dr. Frank H. Lahey, Boston: During the last six months, we have been interested in our clinic in the iodin content of various types of glands and the effect of iodin feeding on the histologic picture. While the histologic picture shows the change of complete involution under thyroid feeding, it is a clinical fact that this picture does not go hand in hand with thyroid function. Time and again, the histologic picture indicates that the patient was not toxic, while in reality he is still toxic and can be cured finally only by subtotal thyroidectomy. It is the duty of all who deal with patients with disease of the thyroid firmly to impress on the public that iodin is not a method of cure in exophthalmic goiter, but a method of preparing patients for operation. We rarely see such patients today who have not been on iodin feeding, and this is at times confusing, particularly in borderline cases, which are difficult enough to diagnose in the first place and are made more difficult by the administration of iodin. Medical practitioners should be urged not to administer iodin to patients before sending them to the surgeon. They should be turned over to him for iodin administration, permitting him to note its effect, to observe the patient and his degree of toxicity before the iodin is administered, and to see borderline cases unchanged by iodin feeding. Up to within the last year I have been skeptical of the value of iodin, but I wish to acknowledge to Dr. Plummer a debt of gratitude for the popularization of this very valuable method in preparation for operation. In dealing with patients with severe thyroid disease, one must bear in mind that even though compound solution of iodin markedly improves them, treatment must still be administered cautiously. If one operates on a number of patients who have had this treatment at a certain stage, he will be surprised to find that every once in a while, in spite of an apparent improvement, one of them may die in an active toxic condition. I believe that no matter how much patients are apparently improved by the solution, it is essential that one have in mind the degree of toxicity previous to its administration, and if any doubt exists, the operation should be divided into two hemithyroidectomies. In the past we have been most ardent advocates of the multiple stage procedure, and we have now largely given it up because of the preliminary use of compound solution of iodin. So far this year we have done 380 thyroid operations on 358 patients, 116 of which have been cases of primary hyperthyroidism. Out of this number of cases of exophthalmic goiter, 100 were completed in one stage and sixteen in two stages by two subtotal thyroidectomies, and no preliminary ligations have been done this year. There has been one death from pneumonia out of the entire series this year. We still believe that, when the slightest doubt exists, a two stage procedure, being the one of caution, should always be employed, rather than to take the slightest chance with the one stage procedure.

Dr. B. T. King, Seattle: Dr. Else has again brought to our attention the question of nonencapsulated adenomatous tissue. I have the impression that the various pathologic descriptions that have been given by different men are not sufficiently uniform to create the impression that the respective writers are agreed on a clear and definite pathologic entity. Wilson of Rochester first described nonencapsulated adenomatous tissue. Later Goetsch described a condition that he termed diffuse adenomatosis. As I recall, he described a condition that he had frequently encountered in patients with a clinical history not greatly different from chronic tuberculosis. A number of his patients had actually been confined in sanatoriums for the treatment of tuberculosis. The pathologic picture he found was of more or less diffuse areas of epithelial cells scattered throughout the gland, with frequently no effort, or abortive effort at least, at acinae formation. The pathologic picture presented by Dr. Else does not appear to correspond with that picture. We have all seen glands similar to those described by Dr. Else. This type of gland is one that develops, as a rule, near puberty, persists as a large diffuse uniform enlargement of the gland for years, later becomes more or less nodular, and under conditions of age, child-bearing, etc., not infrequently grows toxic, presenting a symptomatology not unlike that observed in encapsulated toxic adenomas. These glands grossly are often large, with long bat wing-like projecting poles that extend high in the neck and often below the clavicles. I have been in the habit of classifying them as adenomas associated with colloid goiters, and in operating I have attempted to remove as much as possible of the glossy lobulated tissue that is grossly giving evidence of growth. With the present classification of goiters and the wide variety of pathologic pictures presented under the generally accepted headings, it is questionable whether a new classification will clarify a subject that at best is poorly understood. Only this morning, in the Section on Practice of Medicine, I heard exophthalmic goiter described as one phase of autonomic imbalance, which included everything from Raynaud's disease on one end to exophthalmic goiter on the other, not excepting allergies and pyloric stenosis. However, we can make progress only through new ideas, and it has been interesting to listen to Dr. Else's discussion. I am delighted to hear the excellent results which Dr. Pemberton has had. Also, I share equally with Dr. Lahey his enthusiasm for iodin in the treatment of exophthalmic goiter. Associated with the type of thyroid reactions Dr. Pemberton has mentioned, one encounters acidosis and, frequently, acetone in the urine. Acetone is an end-product of excessive fat and protein metabolism. In the past, surgeons have operated on these patients after they had fasted from twelve to eighteen hours, when the glycogen supply of the liver had been almost completely exhausted. The surgeon induces a hypermetabolism, which, in the absence of carbohydrates, results in acidosis and acetonuria. It has been demonstrated that compound solution of iodin reduces metabolism and postoperative reactions. To my mind it is more rational to prevent acidosis with this solution than to treat it with carbohydrates and alkalis.

Dr. E. P. Richardson, Boston: The introduction of the use of compound solution of iodin in the treatment of exophthalmic goiter marks a most important day, and I am glad to bear tribute to its progress. At the Massachusetts General Hospital for two years we have followed rather closely a small group of cases. We have found, as they have in other clinics, a marked remission in the course of the disease, ordinarily reaching a maximum in from eight to twelve days, an average drop of from 25 to 30 per cent. in the basal metabolic rate, marked clinical improvement and, particularly, marked lessening in the nervous tension. Compound solution of iodin has affected our clinic in two ways. In the first place, the percentage of immediate subtotal thyroidectomies is now over 80. In the second place, it has influenced us in regard to roentgen-ray treatment. Some years age we tried to judge clinically between the effect of roentgen-ray treatment and the effect of operation in exophthalmic goiter. The effect of operation was distinctly superior to the effect of the roentgen ray. Except in very unusual cases, the roentgen ray is not used in our clinic in the treatment of this disease. There are, however, some possibilities of harm in the indiscriminate use of iodin. In the first place, when it is used as a means of medical treatment, it has been shown that the effect is temporary and does not cure the disease. In the second place, as Dr. Lahey has said, it is difficult in some cases to make a diagnosis, and in these cases it is necessary to stop the iodin and wait some weeks before making a diagnosis. Another harm from the use of iodin is in adenomatous goiters, when it may bring on hyperthyroidism. As an aid to surgery, it is unwise to put too much stress on iodin. It improves these cases but does not make then normal operative risks. Even if postoperative crises do not occur, patients are apt to go through operation with a rapid pulse and great sensitiveness to operative trauma and complications; more so than normal persons. Much has been gained by the use of iodin, but it does not convert these patients into normal risks. Another possibility of harm is the sudden omission of iodin after partial thyroidectomy, whereupon there is a possibility of the development of a thyroid crisis. The use of iodin, therefore, is not a cardinal treatment or a medical treatment; it is part of surgical treatment, just as is preliminary operation. The cases need to be properly diagnosed. The iodin must be continued during the postoperative period and in many cases continued in small doses after discharge from the hospital. Finally, some of these cases remain poor risks even after the use of iodin.

Dr. Allen Graham, Cleveland: It is not clear to me from the presentation whether Dr. Else intends to explain all adenomatous goiters as being one entity or as two distinct entities. In the illustrations shown, fetal adenoma, as described by Wolfler (1881), is not clearly differentiated from the type of diffuse adenomatous goiter described by Goetsch and others. Dr. King thinks it is not well to introduce a new classification. There is certainly no objection to the introduction of an entity, new or old, supported by facts. Adenomatous changes that take place in the thyroid are of two distinct types; namely, fetal adenoma, as described by Wolfler, and diffuse adenomatous goiter, having no relation to fetal thyroid. Fetal adenoma indicates congenital goiter, while diffuse adenomatous goiter is a change that takes place in long standing goiters as a result of alternating periods of hyperplasia and involution. In the former there is a great incidence of malignant disease, whereas, up to the present time, we have no convincing example of carcinoma that can be ascribed solely to diffuse goiter. I am heartily in accord with all Dr. Pemberton has said. There is no doubt that the administration of compound solution of iodin is a great advance in the treatment of cases of exophthalmic goiter. Iodin given to such patients can do no possible harm so long as the thyroid is actively hyperplastic. Clinical evidence of hyperplasia is an enlarged soft gland, with thrill and bruit. The effect of iodin administration is evidenced by increasing consistency of the thyroid, disappearance of thrill and bruit, together with clinical improvement. The practical points to be learned by further experience are the amount of iodin to be given, the duration of the iodin treatment, and the time at which to do the primary thyroidectomy. Since July, 1924, we have not performed preliminary operations on any patient under our care. We have been using 10 drops of compound solution of iodin three times a day, observing the patient's general condition, the condition of the thyroid, the metabolic rate, pulse, temperature, etc. Patients have invariably improved satisfactorily, and primary subtotal thyroidectomy has been done in one to three weeks after admission.

Dr. George W. Crile, Cleveland: When David Marine, in 1911, showed that iodin would convert a colloid goiter into one safe for operation, he urged me to use iodin before operation and I did in a certain number of cases. Unfortunately, I used iodin in cases of adenomatous goiter and had bad results with some very sick patients. Therefore, I discontinued the use of iodin but continued the use of large doses of thyroid extract before and after operation and during early convalescence. I have now taken Plummer's idea and give iodin before operation, but only when the glands are hyperplastic. The results have been a definite improvement in the operability of these cases. It should be borne in mind that iodin may induce hyperthyroidism in cases of quiescent adenomatous goiter. Therefore, when we recommend iodin in the preparation of cases for operation, we ought just as strongly to urge that iodin be not given in cases of adenomatous goiter in adults. The use of iodin has not been the only factor at play in reducing our mortality rate. The omission of ether anesthesia, better teamwork, the better recognition of the patient's condition as a whole, all have played their part. By taking the utmost care in building up the water equilibrium, in protecting internal respiration, in the management of the operation itself, we have been able to lower the mortality rate even without iodin. We have had one series of 125 cases without a death without the use of iodin, but we did use thyroid extract. At the present time we use compound solution of iodin only in cases in which the gland is hyperplastic. We have now a series of 441 cases without a fatality. I am making a plea for two things: first, that we do not relax at all in our care of the patient as a whole and in our careful technic in the handling of the patient, and second, that we avoid the use of iodin in cases that might be converted into hyperthyroidism.

Dr. Emil Goetsch, Brooklyn: When iodin is used before operation for exophthalmic goiter, it works wonderfully well. I am in accord with practically everything that has been said by the previous speakers on this subject and would like to offer some additional data on the use of iodin. I have had enough experience to know that when iodin is improperly used or not used in the sense that Dr. Plummer has described, one will not obtain the results that have been claimed. When one gives iodin as a preliminary measure and then delays the operation, he will not again have as favorable a chance. That has been my experience in a number of cases. When a patient has been iodinized thoroughly and then has a relapse, I feel I cannot successfully resort to iodin again. It should be made known, particularly among physicians, that the indiscriminate and repeated use of iodin deprives the surgeon of the opportunity to give his patient the striking benefits of an initial preliminary iodin course. This treatment is the greatest check there is in controlling the very active case. Dr. Else was kind enough to refer to my paper of 1920 in which I described the condition to which I gave the name diffuse adenomatosis. The fact that this condition did exist was mentioned previously, although it was differently classified. I believe it is this group of diffuse adenomatosis that has caused a great deal of difficulty to pathologists because of the varying nomenclature. I became interested in this type because of a number of patients in this group who had had treatment for supposed tuberculosis. One was a nurse who had been to a sanatorium. She was suffering from the syndrome characteristic of diffuse adenomatosis. The metabolic rate was not increased. However, ablation of the gland proved successful. The adenomatous tissue in diffuse adenomatosis is not encapsulated. The entire thyroid is involved. Some of the sections Dr. Else showed were typical of the ones I described; others were not. I am not sure whether in his description he was not including two different kinds of pathologic changes. In diffuse adenomatosis, there is no encapsulation. Anything with a capsule around it is easily differentiated grossly from other thyroid enlargements. Adenomas are characterized by one's ability to recognize them. Furthermore, on palpation the nodules can be felt. One cannot palpate nodules in diffuse adenomatosis. He must interpret the condition from the patient's syndrome and verify it microscopically. Total resection is the treatment and in many cases improvement is remarkable.

Dr. J. Earl Else, Portland, Ore.: Dr. King referred to my paper as bringing out a new classification, but as Dr. Goetsch has said, the describing of a definite pathologic entity is not introducing a new classification. There are two definite distinct pathologic processes: one an adenoma, with a definite capsule, and the other a diffuse adenomatous goiter, with nodular-like masses that for the most part are not definitely encapsulated. Reference has been made to the use of iodin. Iodin has been shown to be of great value in the prevention of goiter. Plummer has demonstrated its value in preparing patients with toxic hyperplastic goiter for operation. But in the treatment of simple goiter we have had little success with its use. At the Goiter Clinic of the University of Oregon, we ran four series of cases of adolescent goiter. In the first series, we gave 10 mg. iodin a day. In the second series, we gave 1 grain (0.06 mg.) of sodium iodid three times a day. In the third series we gave sodium iodid in larger doses, and in the fourth series we gave desiccated thyroid. The patients were observed for a period of from six months to two years, during which time the majority reported every two weeks to have the pulse counted, the neck observed and such other observations made as were necessary. The results were uniformly poor in the series in which iodin was used regardless of the dosage. In the group receiving desiccated thyroid, the results were uniformly good. There were some that did not yield, but the vast majority responded in two or three months. After the thyroid returned to normal, the patients were put on the preventive iodin treatment.

Dr. John deJarnette Pemberton, Rochester, Minn.: This discussion has revolved about iodin. I want to emphasize a statement that was not sufficiently stressed in my paper. In the Mayo Clinic, iodin is given to patients with exophthalmic goiter only as a preparatory measure for surgery, and not with the idea of curing the disease. We believe that by the use of iodin the postoperative hyperthyroid reactions will be controlled completely. This does not mean that iodin will in itself restore the patient to health, because it will not, but by its administration over a certain period of time, the patient may be safely carried through operation. I think it can be prophesied with confidence that within a few years ligation will be the exceptional rather than the prevailing method of preparing the bad risk patients for operation.

RECURRENT TYPE I PNEUMONIA *

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ROCHESTER, N. Y.

The likelihood that a single attack of pneumonia may predispose to subsequent attacks has long been recognized. Statistical evidence has been presented which bears this out: thus, Norris[1] found that of 11,811 cases of pneumonia which he was able to collect from the literature, there had been a previous attack in 1,615, while Cole[2] obtained a history of previous pneumonia in 137 of 607 patients he observed with the disease. Direct observations of two attacks in the same person are relatively infrequently recorded but may be found (among recent reports those of Thomas[3] and Thompson[4] may be cited), and there are instances of many attacks. Cole saw three of the eighteen attacks which affected one individual and found Type III pneumococci in those observed. Norris cites a case of twenty-eight attacks, before the recognition of types of pneumococci. With the increasing knowledge of immunity in pneumococcus infections, it has been thought that Types I and II probably immunized against homologous reinfection. Experimentally, Cecil and Blake[5] found that an attack of Type I pneumonia in the monkey protected against reinoculation one month later. Cole, however, had one case in which Type I pneumonia recurred at an interval of eight months and Thomas observed a patient who, with a history of a previous untyped pneumonia, suffered two attacks due to Type I pneumococcus at an interval of thirty-one days, crisis and recovery both times following the administration of therapeutic serum. As other instances of this kind were not found in the literature, a case closely resembling that of Thomas is thought worthy of record.

REPORT OF CASE

W. S. T., a student, white, aged 20, entered the Peter Bent Brigham Hospital, Nov. 19, 1924, following an hemoptysis. One sister had died of pulmonary tuberculosis at the age of 12; otherwise the family history was unimportant. He was not habituated to alcohol. He had first had pneumonia at the age of 9, and four other attacks of varying severity, all in the spring of the year, followed before he was 15. In none of these was the sputum typed. There were no other data of importance in the past history save that one afternoon in the spring of 1924, while doing light work, he had coughed up blood. Roentgenograms of his chest at another hospital at that time had shown no definite evidence of disease, and after a three weeks' rest in bed, he resumed his normal life. For two months prior to admission, he thought he had tired more easily than before, but he had held his weight and had not coughed until ten days before admission. The morning of his admission, he coughed up about one-half glass of dark blood and promptly came to the hospital. He remained here four days. He had no elevation of temperature and no subsequent hemoptysis. Physical examination showed him to be well developed and well nourished. The teeth were dirty, with several partially filled cavities. Save for fine crackling râles heard by one observer on one occasion at the right apex, the lungs were clear. The examination was otherwise negative. The clinical pathology was normal, and he raised no sputum that could be examined. The lungs were clear by roentgen ray. He was discharged November 24, with a diagnosis of hemoptysis, cause unknown.

He was readmitted, March 21, 1925, complaining of fever and weakness. In the interval, he had felt well and had attended school. He had had one cold in late December, but no hemoptysis or chronic cough, and his weight had remained the same. The night of March 19, following exposure to a draft, he had developed sensations of warmth, sweating, headache and shivering. In the morning he had an unproductive cough and pain in the right chest. A physician sent him to the hospital. He was only moderately ill, with a temperature of 104, pulse from 100 to 120 and respirations 25 per minute. There was moderate dyspnea. His cheeks were flushed, with circumoral pallor and slight cyanosis of the lips but no herpes. Respirations were shallow, rapid and chiefly abdominal; there was dulness at the right lung base behind, with tubular breathing, pectoriloquy and scattered râles. The hemoglobin was 92 per cent. (Dare instrument); the red cells, 5,700,000; the white cells, 15,000 in number, of which 87 per cent. were polymorphonuclear neutrophils. Blood culture, March 21, was positive for Type I pneumococcus, with less than one organism per cubic centimeter. The sputum was at first scanty; on the 24th, when first raised in sufficient quantity, it showed Type I precipitinogen and Type I organisms by the mouse test. No tubercle bacilli were found. On the 23d, after the blood culture was typed, treatment was begun with Type I pneumococcus antibody solution (Felton[6]), and a total of 160 c.c. was given intravenously in nine doses. On the 25th, his temperature fell by crisis, and he had an uneventful convalescence without serum sickness. April 6, chest films showed a diffuse postpneumonic residue in the lower right lung. He was discharged, well, April 9.

He was admitted for the third time, May 2, 1925, complaining of pain in the left side. During the interval he had been well. April 29, he was slightly chilled while witnessing a baseball game. The night of April 30, while dining, he suddenly had severe left-sided thoracic pain, aggravated by inspiration and coughing and accompanied by dyspnea and headache but no chill. The following day, there was nausea and vomiting and one severe chill; his cough became more annoying and he began to raise brownish sputum. There was a sensation of fever. His physician sent him to the hospital. He was extremely ill, with a temperature of 103, pulse from 120 to 140, and respirations from 30 to 40 per minute. He was restless and dyspneic. There was malar flush but no herpes or cyanosis. Breathing was rapid and shallow. In the left axilla and at the left base posteriorly there was dulness, tubular breathing, increased voice sounds and a questionable friction rub, but no râles. There were a few moist râles at the right base. The pulse was regular but small in volume. The examination was otherwise negative. The hemoglobin was 72 per cent.; the red cells 4,510,000, and the white cells, 9,800, of which 86 per cent. were polymorphonuclear neutrophils. Subsequently, the white count rose to 20,000, May 5, and then declined. There were rare urinary casts throughout the febrile period. Blood culture, taken May 2, gave no growth. Sputum was not raised till May 4; it was blood-tinged, was negative for tubercle bacilli and showed Type I pneumococci on mouse inoculation. A roentgenogram of the chest, May 2, showed large areas of increased density at the periphery of the left lung and at the central portion and upper lobe of the right lung. The roentgen-ray interpretation was bronchopneumonia. His condition became worse, with an average temperature of 104, marked lividity and dyspnea and tracheal râles. He was irrational and was twice out of bed. Caffein, strychnin and digitalis were administered, and on the 5th, when the type of infection was established, treatment was begun with Type I antibody solution (Felton), of which he received 75 c.c. in five intravenous injections. Crisis began that night, the temperature falling to 99 the morning of the 6th, with a corresponding drop in the pulse, slowing of the respiratory rate and marked general improvement. His convalescence was uneventful, undisturbed by serum sickness, and he was discharged, well, May 27. He has been observed almost weekly since that time and appears in excellent health. A roentgenogram of his chest in July, two months after discharge, showed some residual increase in hilar markings but excellent clearing. He has been receiving weekly injections of polyvalent pneumococcus vaccine in the hope of averting further attacks.

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* From the Medical Clinic of the Peter Bent Brigham Hospital, Boston, and the Department of Bacteriology of the Medical School of Harvard University.

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[3] Thomas, H. M., Jr.: Recurrent Type I Pneumonia: Serum Treatment of Two Attacks One Month Apart, Am. J. M. Sc. **159**: 103 (Jan.) 1921.

[4] Thompson, W. G.: Recurrent Lobar Pneumonia, New York M. J. **115**: 259 (March 1) 1922.

[5] Cecil, R. L., and Blake, F. G.: Studies on Experimental Pneumonia, VI, Active Immunity Following Experimental Pneumonia in Monkeys, J. Exper. Med. **31**: 685 (June) 1920.

[6] Felton, L. D.: A Study of the Isolation and Concentration of the Specific Antibodies of Antipneumococcus Sera, Boston M. & S. J. **190**: 819 (May 15) 1924.

COMMENT

The first attack recorded was undoubtedly a lobar infection, and the isolation of pneumococci from the blood stream with the presence of organisms and abundant precipitinogen in the sputum establishes it as due to Type I. The second attack, while involving three separate lung areas in three lobes, was nevertheless croupous pneumonia, clinically, and the patches of consolidation appeared by the roentgen ray to be larger than those usually involved in lobular pneumonia. The sputum was twice injected into mice, and each time a pure culture of pneumococcus Type I was recovered. This organism was fatal to mice when injected intraperitoneally in quantities down to 10^{-5} c.c. of eighteen hour broth culture, and was agglutinated to the titer of Type I agglutinating serum (1:64). It is exceedingly unlikely that any other organism was responsible for the pneumonia.

As a rule, antibodies to the pneumococcus are found during convalescence from Type I pneumonia: protective substances (Dochez,[7] Baldwin and Rhoades[8]), agglutinins (Chickering,[9] Blake[10]) and opsonins (Clough[11]) are present in the serum of many patients. The administration of preformed antibody during the illness makes tests for these substances of little value. It may be noted, however, that on March 3, at the height of the first attack and before the administration of antibody solution, the blood serum of this patient protected mice in the approximate proportion of 1 c.c. against 100 fatal doses of Type I pneumococci, whereas at a similar time in the second attack the proportion was 1 c.c. against from 5 to 10, and one month after discharge from the second attack, against ten fatal doses. After two months of subcutaneous immunization with a polyvalent vaccine containing an excess of Type I organisms, the titer was again 100 units to the cubic centimeter. What this might imply, in relation to a possible peculiar inability on the part of this patient to elaborate antibodies, would involve unjustified speculation. It is well to add that, though cultures of the nose and throat two weeks after the second attack failed to show Type I pneumococci, swabbings from the pharynx, Aug. 17, 1925, showed numerous colonies of this organism. Unfortunately, the virulence was not determined. It is possible that the patient is a carrier who occasionally succumbs to the organism present in his pharynx.

SUMMARY

Two attacks of Type I pneumococcus pneumonia occurred at an interval of six weeks in a person who had suffered from several previous untyped pneumonias. There was little response in the production of humoral antibodies to these attacks.

Strong Memorial Hospital.

Clinical Notes, Suggestions and New Instruments

REVERSE PERISTALSIS ASSOCIATED WITH NAUSEA

JOHN H. FITZGIBBON, M.D., PORTLAND, ORE.

Recent contributions by Alvarez[1] and Keeton[2] have presented interesting and valuable evidence as to the cause of nausea. Both find the bowel to be an important factor in nausea production. For a number of years, Alvarez has considered it "very probable that it is brought about by reverse peristalsis, particularly in the bowel."[3]

Clinical evidence has not been abundant, because of evident difficulties in human experimentation. A case recently observed, however, demonstrates very definitely the association of reverse peristalsis and nausea.

REPORT OF CASE

Mrs. E. M., aged 61, referred to me by Dr. H. M. Greene, July 27, 1925, gave a history of intermittent abdominal distress for several months up until two years ago. A diagnosis of peptic ulcer was made by the family physician. After treatment, she was comfortable until three weeks before I saw her, when pain in the epigastrium reappeared. At times, it came on from thirty minutes to one hour after meals, and was relieved by food. The patient frequently was awakened at midnight by distress and by regurgitation of the gastric contents. Nausea was marked when pain was present, but she usually kept from vomiting.

A physical examination gave negative findings, except for tenderness along the colon and in the epigastrium. The Wassermann examination was negative. Three specimens of vomitus showed free hydrochloric acid, 60; total acidity, 83, and occult blood, strongly positive. The urine was normal; the stools contained a large amount of occult blood in five specimens.

Fluoroscopy revealed a constant defect of the lesser curvature, about 1 inch from the pylorus. Vigorous peristaltic waves were seen, but, at times, reverse waves took their place and passed completely and forcibly from the pylorus to the cardia. If, however, a downward wave was met, both faded out. At one time barium had just entered the duodenum, when reverse waves began, and it was seen to pass backward to the pylorus with a sudden rush. It was not possible to tell whether or not some of it entered the stomach from the duodenum.

Whenever reverse waves began, the patient experienced nausea; when the waves were vigorous, vomiting was prevented with difficulty. As the waves subsided, nausea disappeared and normal peristalsis was resumed for a short time, followed by another period of reverse waves and nausea.

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[7] Dochez, A. R.: The Presence of Protective Substances in Human Serum During Lobar Pneumonia, J. Exper. Med. **14**: 665 (Nov.) 1912.

[8] Baldwin, H. S., and Rhoades, Dorothy S.: The Protective Substance in Pneumococcus Pneumonia, with Special Reference to Bacteremia and Specific Treatment, Bull. 141, Hyg. Lab., U. S. P. H. S., April, 1923, p. 43.

[9] Chickering, H. T.: Agglutination Phenomena in Lobar Pneumonia, J. Exper. Med. **20**: 599 (Dec.) 1914.

[10] Blake, F. G.: Antigen-Antibody Balance in Lobar Pneumonia, Arch. Int. Med. **21**: 779 (June) 1918.

[11] Clough, P. W.: The Development of Antibodies in the Serum of Patients Recovering from Acute Lobar Pneumonia, Bull. Johns Hopkins Hosp. **24**: 295 (Oct.) 1913.

[1] Alvarez, W. C.: Reverse Peristalsis in the Bowel, A Precursor of Vomiting, J. A. M. A. **85**: 1051 (Oct. 3), 1925.

[2] Keeton, R. W.: Nausea and Related Sensations Elicited by Duodenal Stimulation, Arch. Int. Med. **35**: 687 (June) 1925.

[3] Alvarez, W. C.: The Mechanics of the Digestive Tract, New York, Paul B. Hoeber, 1922.

An operation, performed by Dr. Rockey, revealed an indurated ulcer, of questionable appearance, involving the lesser curvature and posterior wall. Pyloric resection was done, and microscopic examination confirmed the suspicion of malignancy.

COMMENT

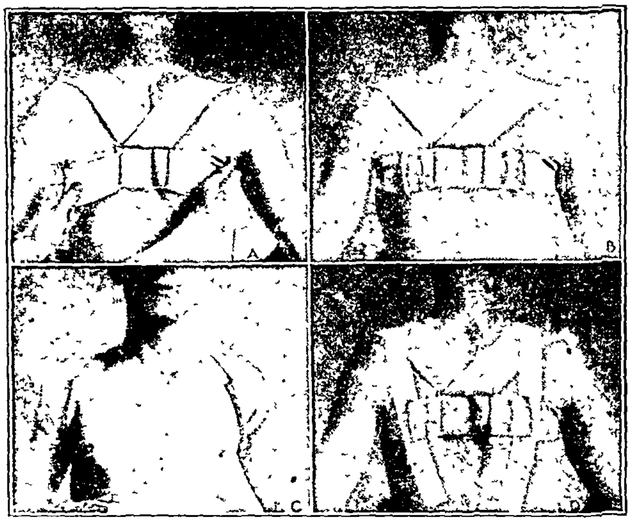
In this case, definite reverse waves of the stomach and of the duodenum were seen. Nausea accompanied the reverse peristalsis and seemed to vary with the force of the waves. Because of the rapidity with which barium passes through the duodenum, it was difficult to see reverse waves in that organ, except in one instance, when barium was rapidly forced backward along the duodenum to the pylorus.

Stevens Building.

A SIMPLE APPLIANCE FOR FRACTURED CLAVICLE

S. H. Rynkiewicz, M.D., Kingston, Pa.
Roentgenologist, Nesbitt West Side Hospital

A simple appliance for effecting and maintaining retraction of the shoulders in fracture of the clavicle consists of a strip of 2½ inch cotton webbing, 58 inches long, and a wire square (as at *A* in the illustration). The child size is a strip 2 inches wide and approximately 40 inches long, with a correspondingly smaller square. The square is made from No. 10 rust-proof clothes-line wire and is bent in a vise into a rectangle form, 2½ inches by 3 inches for adult size, and 2 inches by 2½ inches for child size. The ends of the wire are welded or may be bent in link form to lock.



An appliance for fractured clavicle: *A*, retraction of shoulders accomplished by making traction on the ends of the cotton webbing strip; *B*, each end fastened by strong safety pin; *C*, front view, with felt pads in position; *D*, strip of adhesive over each shoulder holding appliance in position.

The method of accomplishing as much retraction of the shoulders as is necessary simply by making traction on the ends of the cotton webbing strip is indicated in *A* of the accompanying figure. *B* shows each end fastened by a strong safety pin. The front view, with the felt pads in position, is seen in *C*. The pads are so applied that there is no danger of injury to nerves or blood vessels. *D* shows a strip of adhesive, extending from the lower part of the chest posteriorly over each shoulder to the upper part of the chest anteriorly. This adhesive firmly holds the appliance in position. The adhesive strip on the affected side may, if necessary, include a pressure gauze pad over the clavicle fragment.

A wedge-shaped pad under the shoulder of the affected side held in position by two or three turns of a 3 inch muslin bandage, forming a figure of eight, up, over and under the normal shoulder contributes to better alinement of the clavicle and also to immobilization.

The appliance takes up very little space in the hand-bag or may be carried in a coat pocket. There is no fitting to be done and nothing to interfere with the roentgen ray. It holds the shoulders back with minimum discomfort.

Special Article

TYPHOID IN CERTAIN LARGE CITIES OF EUROPE IN 1924*

For comparison with The Journal's annual survey of typhoid mortality in the large cities of the United States and for its general interest, The Journal presents a survey of typhoid in certain large European cities that have populations exceeding 100,000. The cities are grouped by countries.

A remarkably low typhoid death rate prevails in the large cities of Great Britain (Table 1). Probably no other country in the world can show so long a list of large cities free from a single typhoid death. No fewer than fifteen cities in Great Britain with a total population of 2,256,700 have a perfectly clear record for 1924, not a single typhoid death occurring in the whole of this large urban population. In the total list of fifteen British cities no municipality had a rate over 5 in 1924, and all but three had a rate less than 2.

Table 1.—*Death Rates of Cities in Great Britain from Typhoid per Hundred Thousand Population, 1924*

Brighton	0.0	South Shields	0.7
Cardiff	0.0	Woolwich	0.7
Coventry	0.0	Bristol	0.8
Derby	0.0	Liverpool	0.8
East Ham	0.0	Preston	0.8
Gateshead	0.0	Salford	0.8
Leyton	0.0	Greenwich	0.9
Middlesborough	0.0	Plymouth	0.9
Norwich	0.0	Bradford	1.0
Nottingham	0.0	Croydon	1.0
Rhondda	0.0	Hull	1.0
Southend	0.0	Newcastle-on-Tyne	1.0
Swansea	0.0	Lewisham (Catford)	1.1
Walthamstow	0.0	London	1.1
Wolverhampton	0.0	Stoke-on-Trent	1.1
Edinburgh	0.2	Leeds	1.2
Glasgow	0.4	Stockport	1.5
Leicester	0.4	Portsmouth	1.6
Birmingham	0.5	Manchester	1.8
Aberdeen	0.6	St. Helen's	1.8
Dundee	0.6	Sheffield	1.9
Sunderland	0.6	Southampton	4.2
Tottenham	0.6	Huddersfield	4.5
Willesden	0.6	Burnley	4.7

In other words, using the same criteria as adopted in our American survey, forty-five cities in Great Britain would be on the honor roll (from 0.0 to 2.0), three in the first rank (from 2.0 to 5.0), and none in the second or third rank. The largest city in the world, London, reports a typhoid rate for 1924 of only 1.1. Only seven American cities had a better record than this in 1924.

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* The data contained in this article have been obtained in each instance from the municipal health officers. Death rates are figured on reported midyear population when this information could be secured; otherwise on the best estimate available. Owing to annexation of contiguous territory and other factors, the population of certain cities for 1924 is not in all cases comparable with that reported for preceding years, so that comparisons of these figures with earlier typhoid death rates is perhaps not warranted. As will appear in the lists of cities, we have not this year been able to obtain returns from all localities, since our requests or the answers to them have apparently miscarried.

In Germany (Table 2) the typhoid showing, although very good judged by most standards, does not reach the high degree of excellence shown in British cities.

TABLE 2.—*Death Rates of Cities in Germany from Typhoid per Hundred Thousand of Population, 1924*

Chemnitz	0.0	Hamborn-on-the Rhine	2.2
Karlsruhe	0.0	Elberfeld	2.5
Düsseldorf	0.2	Hanover	2.5
Krefeld	0.8	Duisburg	2.6
Gelsenkirchen	0.8	Cologne	2.6
Plauen	0.9	Mainz	2.9
Berlin	1.0	Augsburg	3.1
Frankfort-on-the Main	1.0	Essen	3.1
Nuremberg	1.0	Magdeburg	3.3
Leipzig	1.1	Barmen	3.7
Breslau	1.2	Cassel	4.1
Aachen	1.3	Stettin	4.1
Dresden	1.3	Mannheim	5.2
Munich	1.3	Altona	5.4
Hamburg	1.8	Lubeck	5.7
Saarbrücken	1.8	Brunswick	6.4
Münster in Westphalia	1.9	Bochum	7.0
Stuttgart	1.9	Halle	7.7
Bremen	2.2		

Only two of the thirty-six cities report no typhoid deaths, and more than half of the German cities have rates over 2. Six have rates over 5. On the whole, the typhoid rates in German cities in 1924 did not range notably lower than those in the large cities of the United States that have similar climatic conditions.

TABLE 3.—*Death Rates of Cities in France from Typhoid per Hundred Thousand of Population, 1924*

Strasbourg	0.6	Le Havre	6.1
Rheims	2.0	St. Etienne	6.5
Roubaix	2.6	Nancy	6.7
Lyons	3.0	Nantes	7.1
Rouen	3.2	Bordeaux	7.8
Toulouse	3.4	Brest	13.4
Lille	4.5	Marseilles	31.0
Paris	5.1		

Typhoid rates in the French cities (Table 3) are somewhat higher on the average than those in either Germany or Great Britain. So far as statistics are available, typhoid has for years been more prevalent in France than in Great Britain, Germany or the United States. In general, the northern French cities have lower rates than those farther south, the extremes being represented by Strasbourg (0.6) and Marseilles (31.0).

TABLE 4.—*Death Rates of European Cities Outside of Great Britain, Germany and France, from Typhoid per Hundred Thousand Population, 1924*

Stockholm, Sweden	0.0	Lwow, Poland	8.7
Zurich, Switzerland	0.0	Liége, Belgium	9.5
The Hague, Holland	0.2	Graz, Austria	11.1
Oslo, Norway	0.4	Riga, Latvia	11.2
Utrecht, Holland	0.7	Odessa, Russia	11.4
Copenhagtn, Denmark	1.0	Moscow, Russia	12.0
Helsingfors, Finland	1.0	Yaroslav, Russia	14.0
Antwerp, Belgium	1.3	Leningrad, Russia	14.6
Geneva, Switzerland	1.6	Vilna, Poland	15.0
Basle, Switzerland	2.1	Budapest, Hungary	15.5
Brussels, Belgium	2.3	Cartagena, Spain	15.8
Prague, Czechoslovakia	2.3	Oporto, Portugal	15.8
Dublin, Irish Free State	2.4	Athens, Greece	18.4
Danzig, Danzig	2.7	Warsaw, Poland	20.0
Vienna, Austria	3.7	Lisbon, Portugal	20.7
Bucharest, Roumania	4.1	Murcia, Spain	22.5
Amsterdam, Holland	4.2	Rome, Italy	26.2
Gottenborg, Sweden	7.4	Ufa, Russia	26.4
Ghent, Belgium	8.0	Lorca, Spain	40.0

In the rest of Europe (Table 4) there is a general, although not exact, correspondence between the latitude of the city and the typhoid rate, the cities in southern Europe averaging on the whole higher than those in the north. The Russian and Polish cities, however, appear to suffer more from typhoid than other European communities in the same latitude.

It should be noted that in many parts of Europe the 1924 typhoid rate was notably higher than that for 1923, the increase being particularly marked in the Baltic regions.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

OVARIAN SUBSTANCE, DESICCATED-P. D. & CO.—The entire fresh ovaries (including the corpora lutea) of the hog or cow, dried in vacuo and powdered.

Actions and Uses.—See Ovary, New and Nonofficial Remedies, 1925, p. 251.

Dosage.—Usually 0.3 Gm. (5 grains) daily.

Manufactured by Parke, Davis & Company, Detroit. No U. S. patent or trademark.

Tablets Ovarian Substance, Desiccated-P. D. & Co., 5 grains.

Ovarian substance, desiccated-P. D. & Co., is a yellowish or brownish powder, having a characteristic odor. It is partially soluble in water.

One part of the desiccated powder represents about six parts of the fresh gland.

OVARIAN RESIDUE, DESICCATED-P. D. & CO.—The residue from the fresh ovaries of the hog or cow, after removal of the corpora lutea, dried and powdered.

Actions and Uses.—Ovarian residue is used for the same conditions as those in which the entire ovarian substance is used. (See Ovary, New and Nonofficial Remedies, 1925, p. 251).

Dosage.—From 0.3 to 1.2 Gm. (5 to 20 grains) daily.

Manufactured by Parke, Davis & Company, Detroit. No U. S. patent or trademark.

Capsules Ovarian Residue, Desiccated-P. D. & Co., 5 grains.
Tablets Ovarian Residue, Desiccated-P. D. & Co., 5 grains.

Ovarian residue, desiccated-P. D. & Co., is a yellowish or brownish powder, having a characteristic odor. It is partially soluble in water.

One part of the desiccated powder represents about six parts of the fresh gland.

INSULIN-MULFORD (See THE JOURNAL, June 20, 1925, p. 1917).

The following dosage forms have been accepted:

Insulin-Mulford, 10 Units, 10 Cc.: Each cubic centimeter contains 10 units.

Insulin-Mulford, 20 Units, 10 Cc.: Each cubic centimeter contains 20 units.

Insulin-Mulford, 40 Units, 10 Cc.: Each cubic centimeter contains 40 units.

Insulin-Mulford, 80 Units, 10 Cc.. Each cubic centimeter contains 80 units.

DEXTROSE.—For description, see the U. S. Pharmacopeia X under Dextrosum.

The following dosage form has been accepted:

Ampoules Dextrose 50%, 20 Cc.: Each ampule contains 20 Cc. of a 50 per cent. solution of dextrose U. S. P.

Prepared by Swan-Myers Company, Indianapolis.

Dementia Praecox.—The fundamental clinical disorders of dementia praecox are a weakening of judgment, of attention, of mental activity and of creative ability, the dulling of emotional interest and the loss of energy. Lastly there is the loosening of the inner unity of the psychic life.—Sir Frederick W. Mott.

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SATURDAY, DECEMBER 12, 1925

TO ALL FELLOWS AND JOURNAL SUBSCRIBERS

The small colored slip between these pages is a statement for 1926 Fellowship dues and subscription to The Journal. If enclosed in an individually addressed envelop and sent under two cents postage, the slip might seem more elegant, but it could not be more expressive. Those who have already paid will naturally disregard the slip. All others are urged to cooperate by remitting now and making it unnecessary to send special statements later.

The slip carries also the names and subscription prices of the various other journals published by the Association. Renewals or new subscriptions to any of these may be entered in the blank lines on the slip, and payment made with Fellowship and subscription to The Journal.

Special attention is also called to the color pages at the front of The Journal. In the past, many physicians have found that a subscription to one of the American Medical Association's special journals is an excellent holiday gift to a colleague. Then, too, many members of the profession will doubtless welcome the suggestion of gift subscriptions to *Hygeia*, the health magazine published by the Association. Special rates are offered at this time, and the gift order forms attached to the color pages can conveniently be returned with the statement for Fellowship and subscription dues. One remittance may be made to cover all dues and subscriptions.

IMMUNOLOGIC EVIDENCE AS TO THE EVOLUTIONARY RELATIONSHIPS OF MAN

In these days, when anything pertaining to evolution and the species relationships of man has news interest, much attention will probably be paid to a series of articles by *Landsteiner and Miller*[1] *of the Rockefeller* Institute on the serologic relationships of the blood of the primates. This topic aroused interest in the early days of immunologic investigation, when the blood relationships of different species, as shown by the new methods, were found to throw much light on the problems of biologic relationship and evolution. Nuttall's famous monograph on blood immunity and blood relationship, published in 1904, brought out the fact that precipitin tests with blood serum from primates showed a close relationship between man and the orang-utan, chimpanzee and gorilla, but less relationship between man and the monkeys. Other investigators obtained similar results and indicated that it was difficult to distinguish between human serum and that of the anthropoids by immunologic tests, but that there are readily discernible quantitative differences between human or anthropoid serum and the serum of the monkeys. Landsteiner, having found that species differentiation is more distinct between corpuscles than between the serum of different animals, has applied this fact to an investigation of the relationships of the corpuscles in the different available primates, studying the effects of agglutinins on corpuscles, and refining the results by determining the effect of removal of nonspecific agglutinins by saturation.

While these and other refined methods fail to differentiate the blood of white men and of American negroes, they do show differences between the corpuscles of human and of anthropoid blood, and between the corpuscles of two genera of monkeys, although the precipitin reaction as ordinarily employed fails to make these distinctions. But it is also clearly shown that the difference between the blood of the lower monkeys and the blood of the anthropoids or of man is much greater than that between the blood of man and that of the anthropoids. Indeed, according to immunologic tests, there seems to be less difference between the blood of man and that of the chimpanzee than between the blood of horses and that of donkeys, which species are so closely related that they can hybridize. This observation agrees with the interesting relationship that has been shown in the metabolism of these species; namely, that while nearly all mammals convert most of the uric acid arising in their metabolism into allantoin, man and the anthropoids differ from other mammals, including the common monkeys, in being unable to do this,[2] because man and the anthropoids alike lack the necessary uricolytic enzyme in their livers.[3] These demonstrations of biochemical relationships are in complete agreement with the view commonly accepted by zoologists that man is not evolved directly from any of the existing species of apes and monkeys, which laymen and the fundamentalists continue to assert is the doctrine of evolution, but the monkeys, the anthropoid apes and man have all merely sprung from a common stock, probably at some remote time. The serologic evidence does not indicate that anthropoids are an intermediate step between lower monkeys and man, for man and the anthropoids seem to be equally removed from the monkeys.

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[1] Landsteiner, K., and Miller, C. P., Jr.: Serological Studies on the Blood of Primates, J. Exper. Med. **42**: 841, 853, 863 (Dec.) 1925.

[2] Wiechowski: Prag. med. Wchnschr. **37**: 275, 1912. Hunter and Givens: J. Biol. Chem. **13**: 371, 1912; **17**: 37, 1914

[3] Wells and Caldwell: J. Biol Chem **18**: 157, 1914.

Study of the natural agglutinins present in the blood of man and of apes shows that the anthropoid blood contains the same four groupings that are familiar in human blood, but that similar iso-agglutinogens are not present in the lower monkeys or in other mammals. To explain this fact, the simplest assumption seems to be that the iso-agglutinable factors existed before man and the anthropoids were differentiated from their common ancestor. Paleontologic studies have led to the generally accepted conclusion that the existing species of man is only one of a number of human species, the rest of which have become extinct, as for instance the Neanderthal man. If the group factors evolved before the human stage had been reached, they must have been present in these various fossil human species. At any event, we now find them present in man, the chimpanzee, the orang-utan, and presumably in the gorilla, which is not at present a laboratory animal, but not at all in the ordinary monkeys.

THE NERVOUS CONTROL OF INSULIN SECRETION

The assumption that the metabolism of sugar in the body may be regulated in some way through intermediation of the nervous system is by no means recent, for it originated with the classic piqûre or "sugar puncture" experiment of Claude Bernard in 1855. That investigation fortified the belief that stimulation of sensory nerves or lesions of the central nervous system may produce glycosuria. In the earlier studies of this "nervous diabetes," the implications were that somehow glycogenolysis was brought about by the changes initiated. It was assumed, for example, that there was a direct nervous stimulation of the hepatic cells leading to the augmented production of sugar from the glycogen stored there. Somewhat later, the popular explanation pointed to liberation of epinephrin, a sugar-mobilizing hormone, so that the hypoglycemic effects of nervous origin appeared to be exercised through the intermediation of the suprarenal glands.

The recognition of pancreatic diabetes as a disease entity and the introduction of the idea of insulin deficiency as a cause of sugar surplus have turned the trend of investigation. Whether we conceive of the pancreatic hormone as promoting glycogenolysis or glycolysis or both is of secondary moment in discussing the mechanism whereby the corrective insulin is liberated from the pancreas. Are nerves involved? So far as the external secretion of pancreatic juice is concerned, it has not been easy to demonstrate participation of either splanchnic or vagus nerves, although there is some evidence of the existence of secretory fibers running chiefly in the vagi. There is little doubt any longer that the islets of Langerhans are bountifully supplied with nerve fibers, particularly from the vagi.[1] Britton has remarked that such a wealth of neural elements, intimately related to the islet cells of the pancreas, is obviously of great significance and demands an explanation in terms of function. His own studies[2] at the laboratory of physiology in the Medical School of Harvard University furnish evidence that the internal secretion of the pancreas is affected by nervous influences, and that control of the secretion of insulin occurs through the right vagus nerve. Thus, under appropriate conditions, stimulation of this nerve upsets the constancy of the blood sugar level and produces a lowering of the blood sugar which persists during the period of stimulation. Blood sugar curves representing these results are similar to those obtained under insulin administration. When the stimulus is stopped, the original or even a higher glycemic level may be reached. These phenomena may happen without changes in the circulation; they are missed if the nerves and vessels of the pancreas are ligated.

The new experiments thus lend some support to the suggestion that disturbances of innervation also may be involved in the defective utilization of carbohydrates due to pancreatic disorder.

DEATH FROM ANOXEMIA

Nearly a century and a half has elapsed since Lavoisier drew attention to the true importance of oxygen. Since that time varying conceptions have been advanced with respect to the precise function of the element in the living organism. It was early held that the life processes are essentially those of oxidation, and the obvious analogies of the respiratory exchange with what takes place in ordinary combustion were naturally much stressed. However, there is no longer warrant for assuming that oxygen is the immediate cause of the chemical transformations in the body; it is rather the metabolism that determines the amount of oxygen to be absorbed. Respiration is not the cause of the instability of materials in the tissue cells; but rather the instability of reactivity in the cells is the stimulus for the active consumption of oxygen. Furthermore, the energy liberated in the organism, as in the contraction of a muscle, is not conceived at present to be the immediate outcome of an oxidative explosion but rather to have its source in other chemical changes. Oxygen "supplies the energy to recharge the energy reservoirs of the system."

Whatever the function of oxygen may be in ultimate analysis—whether, for example, it acts directly on the stored nutrients or only on such degradation products as lactic acid—in any event it is indispensable at some stage of the metabolic changes. The end-products of metabolism are almost without exception richer in oxygen—that is, more highly oxidized—than their precursors in the body. A recent writer[1] has remarked that oxidation is essential to the cell as the source of energy; energy is required for the internal and external work of the cell. By external work is meant the specific physiologic activity of the cell; in the case of the muscle cell, contraction; in the glandular cell, secretion, and in the nerve cell, the discharge of the impulse. By the internal work of the cell is meant that, in total absence of external work, the living cell requires energy for the maintenance of its structure, the directional work of permeable membranes, the maintenance of potential inequalities, and the prevention of free diffusion.

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[1] De Castro, F.: Rech. biol. de l'Univ. de Madrid **21**:422, 1923. Gentes, L.: Compt. rend. Soc. de biol. **54**:202, 1902. Pensa, A.: Bol. d. Soc. Med. Chir. di Pavia, June 23, 1904; Arch. ital. de biol. **44**:1, 1905.

[2] Britton, S. W.: Studies on the Conditions of Activity in Endocrine Glands, XVII, The Nervous Control of Insulin Secretion, Am. J. Physiol. **74**:291 (Oct.) 1925.

Although the opportunity for securing oxygen in adequate amounts is rarely interfered with in the usual routine of everyday life, times of stress do arise. The element may be present but not available. "Oxygen," we are told, "like money, is of no value unless we can use it. Oxidation is the important thing for the cell, and oxygen want is but one of many means of reducing oxidation." What happens when an interference actually arises, when anoxemia intervenes? The appearance of organic acids in the urine and blood under such conditions long ago prompted the belief that acidosis, whatever that may have implied, is a prominent characteristic of oxygen deficiency. As a matter of fact, there may be an actual alkalosis of the blood in response to anoxemia. The phenomena have lately been clarified by the studies at the University of Wisconsin. The alkalosis observed is due to excessive loss during the accelerated breathing that occurs with oxygen want. This hyperpnea is, in turn, due to reduced oxidation in the cells of the respiratory center. After a certain period of time, according to the Wisconsin observations, the fixed acids produced as a result of decreased oxidation in the tissues of the body compensate for the loss of carbon dioxid, and the blood p_H becomes normal. Following this, there develops a most extreme grade of acidosis, depending on the degree and duration of reduced oxidation. According to the hypothesis, the acidotic type of metabolism induced interferes with oxygen fixation by the cell and thus further stimulates. This vicious circle of oxygen want and acidosis continues until oxidation is reduced to the point at which no functional activity can be supported. Then, we have depression or paralysis. Finally, the energy liberation is reduced to a point which does not even meet the small requirement of the internal needs of the cell. When the latter no longer is able to continue its usual functions, an irreversible change may ensue—death. Under such conditions, administration of alkali during the acidotic stage may actually prolong life.

Current Comment

THE POST-GRADUATE ASSOCIATION'S "MEDICAL TACTICS"

During the last few weeks the medical profession of this country has been widely circularized by a somewhat imposingly named concern, the "Post-Graduate Association," at 104 Hills Road, Cambridge, England. The advertising booklet sent out by the "Post-Graduate Association" is a red-covered affair entitled "The Management of Patients." The P. G. A. has for sale two "courses," one on "Medical Tactics," and another on Therapeutics. Either course alone is offered to American physicians for $5.50, or both courses for $10. Those who purchase the course on Tactics must sign a contract not to show it to any one else. While we have not seen the complete course, the syllabus, in the booklet already referred to, is intriguing. The course, it seems, instructs the physician how to so influence patients that they will come back again. It gives suggestions as to the doctor's house, its position, the character of its door and door plate, how the waiting and consulting rooms should be furnished, what instruments should be displayed—for psychic effect—and what instruments should be kept out of sight. It appears from the syllabus that the businesslike doctor must make sixteen impressions on each patient in an ordinary case—sixteen-to-one, 1925 model—and the P. G. A. course tells him how to make them. The single case in which it is judicious for the doctor to laugh at the patient is described. This alone should be worth five dollars. From the syllabus one gets the impression that this course in Tactics is similar in character and scope to the "course" of "lectures" given in American chiropractic factories on "How to Sell Chiropractic," except that in this instance it is applied to medicine instead of Palmerism. In order to lend an air of verisimilitude to an otherwise unconvincing narrative, the P. G. A. purports to quote "Press Opinions" of ancient vintage from some medical journals published in the British Isles. The leading opinion quoted is credited to the *British Medical Journal* of June 6, 1914. The quotations in this case are so staccato and so obviously separated from the context as to arouse suspicion. Reference to the *British Medical Journal's* original report shows that our British contemporary published a mildly ironical article that was not in any sense the favorable notice that the disjointed quotations lead one to suppose. Inquiry made in Great Britain brings the information that there is no Post-Graduate Association at Cambridge. The address given is that of the printing firm that got out the syllabus already referred to. So far as we can learn, the "Association" consists of a man (not a physician) and his wife who occupy a little office in the building of the printing establishment. It seems, too, that booklets similar to those circulated among American physicians have been distributed among British physicians, the only difference being that the Post-Graduate Association charges the Britishers six guineas (about $30) for what it offers to the American for $10. What do you make of that, Watson?

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[1] Koehler, A. E.; Behreman, H. M. F.; Benell, O. E., and Loevenhart, A. S.: The Cause of Death from Anoxemia, Am. J. Physiol. 74: 590 (Nov.) 1925.

TYPHOID IN EUROPEAN CITIES

The survey of typhoid mortality in some of the chief European cities, presented in this issue,[1] makes possible a comparison of typhoid in American municipalities with the European prevalence of this disease. The remarkably low typhoid rates in British cities are especially striking. It is evident, however, that there is no longer the great discrepancy between American and European typhoid rates that existed twenty-five or even fifteen years ago. The large cities in Germany, for example, where the antityphoid campaign began early and was conducted with great skill and persistence, are now little if any superior in their rates to American cities. The survey also shows, although there are some cities unfortunately not on our lists, that typhoid is less prevalent, on the whole, in the northern cities than in the southern. This is precisely the same incidence observed in the geographic distribution of typhoid in the United States. Whether this is due to greater opportunities for transmission in cities with a mild or subtropical climate such as are furnished, for example, by more informal ways of living or by more ample opportunity for fly-borne infection, or whether there is a real climatic influence on susceptibility, are questions that can hardly be answered here. Quite possibly both factors may play a part. It will be of interest to observe in succeeding years whether the typhoid trend in Europe is as steadily downward as it has been in the United States since 1910. It can safely be predicted that the suffering and loss of life from typhoid throughout the world in the twentieth century will be only a fraction of what it was in the nineteenth.

RURAL VERSUS URBAN HEALTH

"It is usually those who spend much of their lives in the open who enjoy the best health and the greatest longevity. It is a great advantage to go into camp in the summer and to live in the country as much as possible. This is a fundamental requirement in any healthful living program."[2] These words from a popular exposition on how to live epitomize a widespread belief. By many the championship of the outdoor life is made synonymous with residence in the rural districts. Hence the city dweller has of late often evoked expressions of sympathy from those whom circumstance has protected from an urban existence. There are indications, however, that good health and fine physique are by no means an exclusive privilege of country folk; nor does the urbanite have a monopoly of all the infections and contagions. Not a little surprise was occasioned by the findings of Wood,[3] who concluded from the results of the examination of more than half a million school children that physical defects are greater in rural than in urban children. In harmony with this, Shepard and Diehl[4] ascertained, from an examination of students at a representative state university, that those who have been raised in villages and on farms show more physical defects and more multiple defects than those raised in large cities. The nature of the defects most frequent among students from villages suggest such possible common causes as neglect, congenital anomalies, poor development, frequent exposure to infection, poor hygiene and lack of school health supervision. At any rate, students raised in cities of more than 50,000 population show the lowest number of physical defects. These authors[5] have now supplemented their study by securing data on the relative occurrence of certain diseases previous to the university careers among groups of 5,000 students from various sized communities. Considering here the two extreme groups only, students from the rural communities are highest in past histories of pleurisy, pneumonia, rheumatism, smallpox and tuberculosis; they are lowest in respect to chickenpox, diphtheria, tonsillitis, typhoid fever and whooping cough. Students from cities of more than 50,000 population are lowest in past histories of appendicitis, influenza, measles, mumps, pleurisy and smallpox, but highest in the early incidence of chorea. Male students raised in villages give a history of having had the most diseases. The country and cities vie with one another, the record for low incidence of the common maladies being slightly in favor of the largest cities. It is unwise to dogmatize from statistics derived from a single region, Minnesota; but one cannot overlook the implied possibility that between the present-day rural and urban health-promoting activities the urban practices cannot be regarded as comparative failures.

A HUMORAL MECHANISM FOR GASTRIC SECRETION

The development of the hormone hypothesis in physiology has brought about a notable modification of the points of view from which various functions are now examined. Chemical substances, arising in various bodily localities, may pass into the blood stream and produce effects in distant organs. This provides for a chemical coordination of the activities of the organism working side by side, as Bayliss expressed it, with that through the nervous system. Function is no longer to be conceived of as stimulated or depressed through nervous impulses alone. There can be no doubt of the simultaneous efficacy of humoral regulations as well. The kidney transplanted from the abdomen to distant parts has been seen to preserve its secretory potency after all its nervous connections have been severed. The mammary glands likewise have been demonstrated to develop even after the integrity of their nerve supply has been destroyed. Now Ivy and Farrell[1] at the University of Chicago have given proof of the long postulated humoral mechanism for gastric secretion. They transplanted gastric pouches, severed from the stomach, into subcutaneous tissues in the region of the mammary gland, where the rich vascularity was likely to promote survival of the displaced parts. Such pouches secrete a gastric juice containing acid after a meal and after histamin and gastrin administered subcutaneously. This shows decisively that a humoral stimulus is one of the mechanisms concerned in the genesis of gastric secretion. Ivy and Farrell were successful also in stimulating the glands of the pouch by mechanically distending it with a balloon, which proves that a local mechanism is concerned, at least in part, in this type of stimulation. These new studies do not give a final answer to the question as to what occurs normally when the flow of gastric juice is incited. They merely enforce the admission of humoral possibilities in the domain of gastric secretion.

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[1] Typhoid in Certain Large Cities of Europe in 1924, this issue, p. 1890.

[2] Fisher, Irving; and Fisk, E. L.: How to Live, Ed 18, New York, Funk and Wagnalls Company, 1925, p 28.

[3] Wood, T. D.: Health Essentials for Rural School Children, Ed. 2, Chicago, American Medical Association, 1921.

[4] Shepard, W. P., and Diehl, H. S.: Rural and Urban Health, J. A. M. A. **83**: 1117 (Oct. 11) 1924.

[5] Shepard, W. P., and Diehl, H. S.: Rural and Urban Health. II, A Comparison of Past Diseases in University Students from Rural and Urban Districts, J. Indust. Hyg. **7**: 481 (Nov.) 1925.

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[1] Ivy, A. C., and Farrell, J. I.: Contributions to the Physiology of Gastric Secretion, VIII, The Proof of a Humoral Mechanism, Am. J. Physiol. 74:639 (Nov.) 1925.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

ARIZONA

Personal.—Dr. Kimball Bannister, Phoenix, recently won the state golf championship in a match at Clemenceau.

Society News.—The Yavapai County Medical Society met with the medical officers at Whipple, October 14, each group having in attendance 100 per cent. of its membership.——Dr. John C. Wilson, Los Angeles, addressed the Gila County Medical Society, Globe, November 3, on "Injuries of the Spine."

Hospital News.—At a recent meeting of the staff of the Arizona Deaconess Hospital, Phoenix, Dr. John W. Thomas was elected chairman of the staff; in the report of the chairman of the hospital for the last year, the total number of patients for the year 1924-1925 was said to be 1,817, which was an increase of 72 per cent. over the previous year.

COLORADO

Publicity Report.—The committee on public policy of the Colorado State Medical Society reported at the last annual meeting that in the year 1924-1925 there had been ten lectures and demonstrations in the series arranged for the public and that they cost about $1,600, of which the Colorado State Medical Society contributed about $250; the approximate attendance was 1,600. The subjects of the lectures were (1) The Miracle of the Roentgen Ray; (2) The Magic of the Microscope; (3) Vitamins; (4) The Man of 1940; (5) The Truth About Glands; (6) Teeth: Friends or Foes; (7) Cancer; (8) Medical Frauds; (9) The Dangerous Age; (10) Casting Out Devils.

Free Medical Service.—The visiting staff of the Denver General Hospital is composed of 125 physicians, appointed for one year for a period of service of from two to four months, during which they are subject to call day or night. *Municipal Facts*, published by the city and county of Denver, estimates that the hospital receives in service about a million dollars a year from these physicians. They say that this service is rendered cheerfully, that the visiting staff makes available to the poor the same medical advice that the rich receive and provides for emergencies for everybody and that however the city may improve the hospital, it is well to remember that Denver physicians bestow the gift inestimable.

CONNECTICUT

Personal.—Dr. Theodore S. Moise, Jr., has been promoted to an assistant professorship at Yale University School of Medicine, New Haven.

Further Assistance to General Practitioners.—Yale University School of Medicine, New Haven, has extended its cooperation with physicians of the state in arranging to have clinics conducted by members of the faculty at the Middlesex Hospital, Middletown. There will be a clinic each month covering pediatrics, surgery, medicine, obstetrics and gynecology, in charge of Drs. Edwards A. Park, Samuel C. Harvey, Francis G. Blake and Arthur H. Morse, respectively.

DELAWARE

Quack Grenoble Gets Two Years.—Sentences totaling two years were imposed, according to the Wilmington, Del., papers, on "Dr." Arthur G. Grenoble (alias Greenoble) on charges of embezzlement and practicing medicine without a license. He was sentenced to a year's imprisonment on each charge, the sentences to run consecutively. It seems that Grenoble borrowed money two years ago on the claim that he wanted to start a business of selling "Stommache Water." He did not start the business nor would he return the money; hence the charge of embezzlement. The other charge was lodged against him as a result of his treatment of an aged man for what was believed to be cancer. Grenoble has called himself "president" of a quackish outfit known as the "Grenoble Arthurg College," which purported to give a "postgraduate course in the treatment of cancer." Grenoble has been a notorious quack for years. In 1914 he was plying his trade in Key West, Fla., and carried full-page advertisements in the Key West *Morning Journal*. According to reports made at that time by the state board of health of Florida, the Monroe County Medical Society secured sufficient evidence against Grenoble (at that time he called himself "Greenoble") to get him convicted of violating the Medical Practice Act, but the quack had enough political and newspaper influence to be immune. He was twice convicted and sentenced in Florida. The first time a local senator and some other politicians succeeded in having his sentence revoked. On his second conviction he was fined $400, and a paper that carried his advertising came out with a two-column article deploring what it termed the outrage and abuse of justice in sentencing this "benefactor." A subscription was started by means of which enough funds were raised to pay Grenoble's fine. In 1921 Grenoble was quacking it in Atlanta, Ga., and in July of that year was sentenced to pay a fine of $500 and serve twelve months on the chain gang and three months in the county jail. The matter was reported at the time in this department of The Journal, Aug. 6, 1921. In 1923 Wilmington, Del., papers carried a news item to the effect that the Wilmington Preachers' Association had been impressed by Grenoble's assertion that he had discovered a cure for cancer and had named a committee to make an investigation.

DISTRICT OF COLUMBIA

Society Elections.—At the annual meeting of the Medical Society of the District of Columbia, December 2, at Washington, Dr. Joseph S. Wall was elected president; Drs. Charles S. White and Amelia Frances Foye, vice presidents; Dr. Coursen B. Conklin, secretary-treasurer, and Dr. William G. Morgan, delegate to the American Medical Association.——At the annual meeting of the Washington Tuberculosis Association, November 30, Dr. George M. Kober was reelected president and Dr. Harvey W. Wiley, vice president. Dr. William C. Gwynn and Dr. William C. White were elected members of the board of directors.

GEORGIA

Personal.—Dr. John O. Elrod, Forsyth, formerly president of the Medical Association of Georgia, has been appointed by the governor to fill the vacancy on the state board of medical examiners caused by the resignation of Dr. William C. Williams, Jr., Cochran.——Dr. Dunbar Roy has been elected professor emeritus of otorhinolaryngology at Emory University, Atlanta. Dr. Roy has been connected with the medical department of the school for thirty-one years.

ILLINOIS

Personal.—Dr. Thomas G. McLin, formerly of Jacksonville, has been transferred to the U. S. Veterans' Hospital, Fort MacKenzie, Sheridan, Wyo., where he will be clinical director.——Dr. Henry A. Merkel, Wilmington, has been appointed physician to the Soldiers' Widows' Home, to succeed Dr. Charles J. Carlin.

Society News.—Dr. Roden Robinson Duff, Chicago, addressed the Adams County Medical Society, Quincy, November 9, on "The Management of Common Fractures."——Dr. Harold M. Camp, secretary, Illinois State Medical Society, addressed the Chamber of Commerce of Cambridge, November 16, on "Medical Service in Illinois."

Chicago

Chemistry Luncheon.—At a luncheon, December 5, at the University of Chicago, given by President Max Mason, Dr. William H. Mayo, Rochester, Minn., gave an address on "Chemistry in Medicine"; Arthur D. Little, D.Chem., Cambridge, formerly president of the American Chemical Society, on "Chemistry in Industry," and Julius Stieglitz, Ph.D., head of the department of chemistry, University of Chicago, on "Chemistry in the University." Following luncheon, the guests were taken through Kent Chemical Laboratory, where each man engaged in research demonstrated his particular problem.

Dr. Hedblom Appointed Professor of Surgery at Illinois.—The board of regents of the University of Wisconsin announced, December 2, the resignation of Dr. Carl Hedblom, who has been professor of surgery in that institution since June 26, 1924. Dr. Hedblom has been appointed professor of surgery at the University of Illinois College of Medicine, Chicago, and will take up his duties, February 1, 1926. Dr. Hedblom is a graduate of Colorado College (B.A.), Harvard University (M.D.), and the University of Minnesota (Ph.D.); he was an intern in the Massachusetts General Hospital, Boston; professor of surgery in the Harvard Medical Schools of China from 1913 to 1916; appointed head of the section on general thoracic surgery at the Mayo Foundation in 1919 and was assistant professor of surgery in the University of Minnesota.

Health Pageant.—Sponsored by the Seventh District Illinois Federation of Women's Clubs and under the auspices of the Northwest Branch of the Chicago Medical Society and the Northwest Branch of the Chicago Dental Society, an All-Community Health Pageant was held, December 3-5, at the Logan Square Masonic Temple. Among the features of the pageant were free medical and dental examinations for children and adults, and a prize was given for the healthiest man and woman past 70 who lived on the northwest side. Among the speakers were Dr. Thomas Parran, Jr., U. S. Public Health Service, whose subject was "Cooperation"; Dr. Abraham Myerson, professor of neurology and neuropathology, Tufts College Medical School, Boston; Charles N. Johnson, D.D.S., formerly president of the American Dental Association; Dr. Claude C. Pierce, U. S. Public Health Service; Dr. Borden S. Veeder, St. Louis, and Dr. Morris Fishbein. The physicians and dentists were guests of the business men of the Northwest side at a dinner, Friday evening.

INDIANA

Joint Meeting with Dentists.—Dr. Joseph C. Bloodgood, Johns Hopkins University Medical School, Baltimore, was guest of honor at a joint meeting of the First District Dental Society and the Vanderburgh County Medical Society, Evansville, December 4, on which occasion he gave an address on "Prevention of Cancer of the Mouth"; among others Dr. Bernard D. Ravdin spoke on "Stomatologic Problems Causing Eye, Ear, Nose and Throat Complications" and William G. Downs, Jr., D.D.S., on "Stomatology, the Common Ground in Medicine and Dentistry"; it was decided to call a meeting of dentists and physicians in this locality for the purpose of forming a stomatologic association, which, it is said, would be the first in the Middle West.

IOWA

Society News.—Dr. Daniel G. Lass, Ocheyedan, has been elected president of the Northwest Iowa Medical Association, and Dr. Walter R. Brock, Sheldon, vice president.

Personal.—Dr. Jeannette Jongewaard has been appointed medical adviser at Iowa State College, succeeding Dr. Mary J. Sheldon, resigned.——Dr. Jesse L. McElroy, formerly of St. Mark's Hospital, New York, arrived in Iowa City, November 12, to take up the duties of superintendent of the University of Iowa General Hospital, succeeding Dr. Bert W. Caldwell, resigned.——Dr. Lee E. Shafer, Davenport, has been elected president of the Scott County Medical Society.

KENTUCKY

New Health Officer for Louisville.—The board of public safety, November 28, approved the appointment of Dr. Clarence H. Harris as city health officer of Louisville, to succeed Dr. Evan Ellis Owen, whose resignation was accepted as of December 1. Dr. Harris is a past president and treasurer of the Jefferson County Medical Society, and former county health officer.

Personal.—Dr. Oliver P. Henry tendered his resignation as county health officer of Mount Sterling, October 30.——Dr. Felix G. Fowler was appointed physician for the negro schools by the board of public safety at Louisville, November 10, to succeed Dr. Percy R. Peters.——Dr. Robert D. Higgins, Ashland, has been reelected director of the Boyd County Board of Health for a period of four years.

LOUISIANA

Personal.—Dr. E. Denegre Martin, New Orleans, was elected president of the Southern States Association of Railway Surgeons at the meeting of the Southern Medical Association in Dallas, Texas, November 9-12.——Mr. John M. Pugh took up his new duties as director of the dairy division of the Louisiana State Board of Health, December 1.——Dr. Lucy S. Hill, Washington, D. C., recently joined the staff of the bureau of child hygiene, infancy and maternity division of the state board of health.

New Building for Charity Hospital.—A cordial invitation was extended to the public to visit the new $335,000 building of the Charity Hospital, New Orleans, November 30, previous to its being placed in service the following day. The building faces on Tulane Avenue, and has a capacity of 120 beds, which will be for white female medical patients. An appeal to the public for funds for this building made in March, 1923, resulted in contributions of more than $289,000 to which interest and other small sums were added, making about $310,000. The deficit will be reduced by the payment of a pledge from Jefferson parish for $10,000; Tangipahoa parish also pledged by a former police jury, $15,000, according to the *Times-Picayune*. The hospital now has a total of 1,250 beds.

THE SLIP FOR SUBSCRIPTION AND FELLOWSHIP DUES IS IN THIS ISSUE.

MICHIGAN

Personal.—At the recent convention in Lansing of public health officers, Dr. Charles A. Neafie, Pontiac, was elected president of the Michigan Public Health Association; Dr. William J. V. Deacon of the Michigan State Department of Health, secretary-treasurer, and among others, Dr. John Sundwall, Ann Arbor, professor of hygiene and public health, University of Michigan Medical School, was elected a director.

MINNESOTA

Society News.—Dr. Naboth O. Pearce addressed the Hennepin County Medical Society, November 25, on "Dietary Considerations in the Care of Diabetic Children," and Dr. Jennings C. Litzenberg, on "Some Newer Phases of Sterility."——Dr. Angus W. Morrison addressed the Hennepin County Medical Society, December 2, on "Mental Hygiene and the Physician," and Dr. Richard R. Cranmer on "Differential Diagnosis in Acute Abdominal Disease."——At the regular meeting of the Minneapolis Academy of Medicine at the Town and Country Club, Minneapolis, December 9, Dr. Winford P. Larson gave an address on "The Value of Surface Tension Depressants in Detoxifying Bacterial Toxins for Immunization," and Dr. George E. Fahr on "The Fatigue Factor in Cardiac Failure."

MISSOURI

The Adcox Confession (Continued).—When the United States entered the World War, the demand for fraudulent diplomas doubled. Dr. Robert Adcox says in the St. Louis *Star*. The chiropractors, osteopaths, mechanotherapy fakers, and electrotherapy and hydrotherapy quacks, "who had been clinging to the coat tails of medicine," wanted commissions in the army medical corps. He says that low-grade colleges graduated ignoramuses in droves and that students in first-class institutions deserted their classes to go to "mill schools" to graduate or to purchase diplomas outright. Adcox says that hundreds of quacks and charlatans wore uniforms, that some young chap who felt called to serve his country rung his door bell every few minutes, and that he did his "bit" by assisting the government to obtain "the needed doctors." Now at 63, "in these days of life's autumn," Adcox says he is awakened by a cry which others cannot hear but which he knows is that of victims who died in training camps—victims of charlatans. The demand for diplomas continued after the armistice, it is said, so it was necessary to open new agencies and branch offices of the "National Medical Diploma Mill." Owen T. Owen was active in Chicago; Frank J. Kenney in Washington and Baltimore; Ralph A. Voigt, who now had his M.D. and was out of the army, in Kansas City, and others were "on the ground" in Boston, New York, Philadelphia, Los Angeles, New Orleans, Houston, Dallas, Minneapolis, Detroit, San Francisco, Memphis and a score of other cities. Barred from association with respectable members of the profession, the charlatans felt the urge to join something that would offer at least a cloak of respectability, so "medical societies" multiplied like rabbits. Thus there were created hybrid societies which for a fee issued certificates of membership. "The Incorporated Society of Science, Letters and Arts of London, Limited," and the "Italian Physico-Chemical Academy" continued to sell "their stuff" long after being exposed, the former conferring an "F.S.S.C. Lond.," which any quack could purchase for $5 by writing to London. These letters stand for fellow of the Incorporated Society of Science, Letters and Arts of London, and mean nothing. The "Academie Physico-Chemique Italienne" was operated by two nonscientific men, who mailed hundreds of letters from Palermo to American physicians, informing them that they had been nominated as honorary members of the academie by the council and had had conferred a medal and diploma. Imagine, Adcox says, how the quacks went after these medals. But they were caught by a joker in the constitution and had to pay a fee for their honors. The general public and even the public health authorities have no idea, he says, of the extent of operations of these mills. With some state boards willing to accept almost any credentials, the problem confronting Adcox was how to obtain licenses for persons too ignorant to pass an examination. Having been offered $1,000 for a license to practice in a Southern state, Adcox decided to enter this field.

NEW YORK

Hospital News.—The Troy Hospital, Troy, celebrated its diamond jubilee, November 18, at Music Hall, with appropriate ceremonies, and among the speakers were Dr. Joseph Collins, New York, and the Hon. Alfred J. Talley of the Court of General Sessions, New York. Dr. Melville D. Dickinson, chief of the medical staff of the hospital, presented Mayor Clinton, who presided at the ceremonies.

Safety Congress.—The Ninth Annual Industrial Safety Congress and Exhibit was held in Syracuse, November 30-December 3, under the auspices of the State Department of Labor and with the cooperation of the Medical Society of the State of New York and the New York State Society of Industrial Hygiene. There were discussions, the reading of papers and a safety exhibit. Industrial accidents in New York last year numbered more than 374,000.

New York City

Physicians' Buildings.—A twenty-two-story office building for the use of physicians is to be erected on Fifty-Ninth Street between Sixth and Seventh avenues, facing Central Park.——A new office building for Brooklyn physicians is to be erected at 128-130 Livingston Street by a firm of New York builders.

Personal.—Dr. Samuel Weiss has been appointed adjunct professor of gastro-enterology at the New York Polyclinic Medical School and Hospital.——Dr. Adolph Jacoby has been promoted to assistant professor of gynecology on the staff of Dr. Walter T. Dannreuther at the New York Post-Graduate Medical School and Hospital.——Friends of Dr. Charles Norris, the city's chief medical examiner, gave a dinner in his honor, November 28, at the Hotel McAlpin. Dr. Norris recently returned from abroad, according to the New York *Medical Week*, fully restored in health.——Dr. William Seaman Bainbridge gave a dinner in honor of Sir William Arbuthnot Lane, London, at the Union League Club, November 25, which was attended by sixty-five physicians.

Society News.—Dr. A. M. Pennell, Bannu, Hindustan, addressed the Women's Medical Association at the New York Academy of Medicine, November 18, on "Medical Work Among the Women of India."——Dr. Binford Throne has been elected president of the Brooklyn Dermatological Society; Dr. John C. Graham, vice president, and Dr. Ernest Almore Gauvain, secretary-treasurer.——At the annual meeting of the New York County Medical Society, November 23, Dr. William P. Healy was elected president; Drs. Henry S. Patterson and John Douglas, vice presidents; Dr. Daniel S. Dougherty, secretary, and Dr. James Pederson, treasurer.——Dr. O. Paul Humpstone has been elected president of the Kings County Medical Society to succeed Dr. John E. Jennings; Dr. Thurston S. Welton, vice president, and Dr. Thomas M. Brennan, secretary, reelected.——Dr. Martin L. Janes addressed the Ward's Island Psychiatric Society, November 25, on "The Therapeutic Value of Blood Transfusion in Certain Psychoses."——At the annual election of the New York Academy of Medicine, December 3, Dr. Charles A. Elsberg was chosen vice president for three years, and Drs. Nathan E. Brill and Eugene H. Pool trustees for five years.

OHIO

Medical Mayors.—At the elections in Ohio last month, Dr. Samuel M. Mehaffey was elected mayor of Dennison; Dr. Claud C. Craig, mayor of Urbana, and Dr. Charles T. Gallagher, mayor of Mount Sterling.

Joint Study of Expert Testimony.—The Cleveland Bar Association and the Academy of Medicine of Cleveland are conducting a study of problems involved in medical expert testimony. The committee will study these questions: (1) What has been done in other states in the past? (2) If an impartial group of medical expert witnesses could be used, should this group be established by the court or by the medical profession through its organizations? (3) What would be the effect of such a group on procedure in trial cases? (4) How should such a group be compensated for their services? and (5) What questions of constitutionality would be involved in any proposed change? The members of the committee are Drs. George E. Follansbee, Vernon C. Rowland, Charles W. Stone and Jacob E. Tuckerman, and Paul Holland, John A. Cline, C. A. Niman and Herman J. Nord of the bar association.

Society News.—Dr. Carroll W. De Courcy, Cincinnati, addressed the Wood County Medical Society, Bowling Green, November 19, on "Arthritis." Dr. Frank V. Boyle was elected president of the society, Dr. Edward H. Mercer, vice president, and Dr. Orval I. Nesbit, secretary-treasurer.——Dr. David H. Morgan will address the Medical Section of the Summit County Medical Society, Akron, December 22, on "Encephalitis Lethargica and Its Sequelae"; Dr. James G. Blower will address the Surgical Section, December 8, at the People's Hospital on "Cancer of the Breast."——Members of the Jefferson County Medical Society gave a testimonial dinner in Steubenville, recently, to honor Dr. James C. M. Floyd, who has completed fifty years in the practice of medicine, forty-three of which have been spent in the city of Steubenville; flowers and a silver loving cup were presented to Dr. Floyd, and among those who spoke were Dr. Benjamin A. McClelland, Xenia; Dr. Benjamin F. Harden, Wellsburg.

OKLAHOMA

New Full-Time Health Officers.—The three new full-time county health units to be established soon in McCurtain, Bryan and Kay counties will be in charge of Dr. Robert D. Williams, Dr. Grady F. Mathews, and Dr. David M. Cowgill, respectively.

Medical School Building Opened.—The new $100,000 medical building of the University of Oklahoma at Norman, which was completed last February, was formally opened to the public, November 23, when more than 4,000 persons saw the various departments in operation. It is a reenforced concrete structure with brick veneer tile roof, three floors and a basement, and is one of three units of a proposed building which will be completed when funds are available.

Birth Registration.—Six representatives of the state department of public health are now engaged in making a state-wide survey to determine the completeness of registration of births. They are visiting every school in the state to interest parents in birth registration. The cooperation also of every county superintendent of health and the clergy have been obtained; 500 local registrars will assist in obtaining the support of women's clubs; every organized community center will be urged to see that the exact date and place of birth of every child under 1 year of age is forwarded to the state department, and an addressed postcard will be placed in every home in the state where a birth has occurred in the last year.

Philadelphia

Dr. Lloyd Honored.—Members of the Blockley Ex-Resident Association, at their thirty-ninth annual banquet, December 1, honored Dr. James H. Lloyd on the occasion of his birthday; Dr. Lloyd has served for many years as chief of the neurologic service; among the speakers were Dr. Daniel J. McCarthy, president and toastmaster; Dr. Charles W. Burr, chief of the neurologic service in 1896; Dr. Joseph C. Doane, superintendent, Philadelphia General Hospital; Dr. George H. Fox, New York, a resident in 1869, and Dr. Isaac H. Moore, Seattle, '78. Dr. David Riesman was elected president for the coming year.

Medical Lectures. — Dr. Simon Flexner, director of the Rockefeller Institute, delivered the third Weir Mitchell Oration, December 9, at the College of Physicians, on "The Advancement of Epidemiology Through Experiment."——Dr. Edward W. Archibald, professor and director of the department of surgery, McGill University Faculty of Medicine, Montreal, delivered the Mutter Lecture of the College of Physicians, December 11, on "The Pathology of the Compressed Lung; Lipoidal Injections of the Tuberculous Lung; Results of Surgical Treatment in Unilateral Pulmonary Tuberculosis."——Dr. William F. Rienhoff, Jr., department of surgery, Johns Hopkins University Medical School, Baltimore, addressed the Pathological Society, December 10, on "The Histologic Changes in Exophthalmic Goiter Following the Administration of Iodin."

THE SLIP FOR SUBSCRIPTION AND FELLOWSHIP DUES IS IN THIS ISSUE.

WASHINGTON

Personal.—Dr. Percy P. Cooley, Monroe, who was recently appointed as health officer of Snohomish County and physician at the Aldercrest Sanatorium, to take effect, Jan. 1, 1926, has resigned.

Society News.—Dr. C. C. Tiffin, Seattle, who has been studying cretinism and goiter in Switzerland, addressed the Jackson County Medical Society, Medford, Ore., November 18, and the Thurston County Medical Society, Olympia, November 20, on "Cretinism and Its Relation to Goiter."

Attempt to Restore Sanipractors' Licenses.—A bill introduced in the legislature now in session, if passed, will restore about ninety licenses of sanipractors, which were recently revoked for having been obtained from a "diploma mill" in Seattle. The bill would create also a separate board of examiners for sanipractors, which would offer examinations in anatomy, physiology, hygiene, pathology, kinesiology, herbology, obstetrics, toxicology and other subjects. Sanipractic is defined as "the science and art of applied prophylactic and therapeutic sanitation, which enable the physician to direct, advise, prescribe or apply food, water, roots, herbs, light, heat, exercise, active and passive, manipulation, adjusting tissue, vital organs and anatomical structure by manual, electrical instruments or appliances, or other natural agency, to assist nature restore a psychological and physiological interfunction." The house committee has reported the bill unfavorably.

WYOMING

Outbreak of Botulism.—The four children of Mr. and Mrs. A. H. Collins, Rawlins, are reported to have died suddenly of botulism following the eating of sandwiches made from canned meat, November 21. The father, who was also very ill, recovered. State and local health officials are investigating the entire stock of canned meat in the city.

GENERAL

New Editor Appointed.—The board of trustees of the American Dental Association at the recent annual meeting, Louisville, Ky., elected Charles N. Johnson, D.D.S., Chicago, editor of the *Journal of the American Dental Association*, to succeed Dr. Otto U. King, who becomes business manager of the Association and retains the office of general secretary. Dr. Johnson was formerly president of the American Dental Association and for many years editor of *Dental Review*.

Regional Institute for Tuberculosis Workers.—Under the auspices of the National Tuberculosis Association and the tuberculosis associations of the New England States, New York, New Jersey, New York City and Brooklyn, there will be an institute for tuberculosis workers held in New York, Jan. 4-20, 1926, which will be conducted by round table conferences. The courses include three divisions: (1) "Methods of Antituberculosis Work"; (2) "Programs of Antituberculosis Work"; (3) "Relation of the Tuberculosis Campaign to Other Social and Public Health Movements." Membership in the institute will be by invitation following personal application, which should be sent to Philip P. Jacobs, 370 Seventh Avenue, New York.

News of Epidemics.—An outbreak of eight cases of smallpox in the village of Sawyerville, Ala., was reported, November 19, and more than 200 cases of smallpox in Pottawattamie County, Iowa, November 29, the latter of a mild type. ——The city and county health officers of Evansville, Ind., took steps Thanksgiving Day to check an epidemic of more than forty cases of scarlet fever in the city and about twenty cases in rural communities. There were seven new cases of scarlet fever reported in the thirty-six hours, ending November 28, in Evansville, bringing the number of cases in the city to ninety.——An epidemic of fourteen cases of scarlet fever was reported in the village of Morgan, N. J., November 25, and another in the Wilson School, Camden, N. J., on the same date.——There were fourteen cases of scarlet fever in quarantine in Muscatine, Iowa, November 28.——The city schools of Carlisle, Ky., were ordered closed by the county health officer for a few days, November 25, to permit fumigation of the buildings to prevent the spread of diphtheria; at that time there were three cases in that city.——The public schools of McGuffey, Ohio, were closed, November 20, it is reported, on account of an epidemic of scarlet fever.

"Tranquillity."—It has been proposed that the national home for aged and incapacited physicians shall be "home" in the fullest sense of the word and that it shall be called "Tranquillity." The first unit, founded four years ago in Caneada, N. Y., has been successful. There have been hundreds of cases that could not be accommodated. It has been necessary to appeal to the public to secure funds to build a home of national size with smaller units throughout the country to meet sectional needs. The project was laid before some of the ablest physicians and before a number of prominent persons outside the medical profession, and their unanimous belief was that the public would support a campaign to raise funds. The campaign was recently opened with headquarters in the Times Building, Forty-Second Street and Broadway, New York City, to which office subscriptions should be sent. Several million dollars will be required. The home is not to be in any sense luxurious. It will be a plain, substantial institution, well furnished, to meet the average wants of the average man. The inmates will be encouraged to employ their time; a well appointed laboratory is contemplated wherein those whose faculties permit may still pursue their studies with the hope that medicine may benefit by their investigations; it is also contemplated that arrangements shall be made for physicians who, falling ill, may need a haven in which to win back their health. Those who subscribe $5,000 will be designated as Benefactors; those who subscribe $2,500 will be designated as Donors; $1,000, Patrons; $500, Life Members, and $100, Sustaining Members. None of the officers or directors of the home are paid as such nor will they participate in the funds subscribed.

Society News.—At the annual meeting of the Central States Pediatric Society, Chicago, November 6-7, Dr. George M. Tuttle, St. Louis, was elected president; Dr. Frederick C. Rodda, Minneapolis, vice president, and Dr. Henry T. Price, Pittsburgh, secretary-treasurer, reelected.——Dr. James Y. Welborn, Evansville, Ind., was elected president of the Ohio Valley Medical Association at the twenty-sixth annual meeting in Indianapolis, November 11; Drs. Daniel N. Eisendrath, Chicago, Emmet F. Horine, Louisville, Ky., and Dr. Joseph E. Pirrung, Cincinnati, vice presidents, and Dr. Benjamin L. W. Floyd, Evansville, Ind., secretary-treasurer, reelected. Among the speakers were Dr. Joseph Miller, Chicago; Dr. Bethuel B. Vincent Lyon, Philadelphia; Dr. William H. Foreman, Indianapolis, and Dr. Martin H. Fischer, Cincinnati. The next annual meeting will be in Louisville.——The Midwinter Session of the American Electrotherapeutic Association and affiliated Eastern societies will be in the New York Academy of Medicine, Jan. 6-7, 1926; there will be clinical demonstrations at the Reconstruction and the Beekman Street hospitals; among others, Dr. William

B. Snow, New York, will discuss "Treatment of Local Septic Infection"; Dr. Sinclair Tousey, New York, "Dangers of Roentgen Rays"; Dr. William T. Johnson, Philadelphia, "The Value of Static Currents in Preventing Baldness"; Dr. William D. McFee, Haverhill, Mass., "Physiotherapy in the Treatment of Arthritis"; Dr. Morris Fishbein, editor of THE JOURNAL, "The Council on Physical Therapy"; Dr. Wendell C. Phillips, New York, President-Elect of the American Medical Association, and Dr. Horatio B. Williams, Dalton, professor of physiology, Columbia University College of Physicians and Surgeons, "The Council on Physical Therapy." ——The American Psychological Association will hold its annual meeting, December 28-30, at Cornell University, Ithaca, N. Y. The annual dinner and the presidential smoker will be Tuesday evening.

Bequests and Donations.—The following bequests and donations have been announced recently:

The Huggins Hospital, Wolfeboro, N. H., $2,000, by the will of the late Lyford A. Merrow for the benefit of patients from Ossipee, and $5,000 to the Boston University, and $10,000 for a fund, the interest on which is to assist young persons from Ossipee to obtain an education.

The New England Deaconess Hospital, Boston, the residuary estate after certain bequests to relatives and certain churches, of Elzora A. Purington, Portland, Me.

The Springfield Hospital, Springfield, Vt., the First Methodist Church of Springfield and the town of Springfield, a total of $24,000, by the will of the late C. F. Wilson, New York.

The Virginia Baptist Hospital, Lynchburg, Va., a gift of $75,000 from Mrs. Annie C. Mundy, Natural Bridge, Va., for the construction of a second unit as a memorial to her husband, her daughter and self.

Jefferson Hospital, $5,000, to establish a bed in his mother's memory, by the will of the late Dr. Duncan L. Despard, Philadelphia.

The Home for Incurables, Chestnut Hill, Pa., $5,000; the Pennsylvania Institution for Instruction of the Blind, $2,000, and the Chapin Home for the Aged Blind and the West Philadelphia Homeopathic Hospital, each $1,000, by the will of Miss Louisa T. Pfaff, Philadelphia.

The Pennsylvania Hospital, $50,000, and the Children's Hospital, Philadelphia, $250,000, by the will of the late Wilson Catherwood.

The Hospital for Ruptured and Crippled Children, New York, $20,000, and the New York Association for the Blind, $25,000, by the will of the late William Carr.

Lenox Hill Hospital, New York, $50,000, by the will of the late Rudolph J. Schaefer.

The Amsterdam City Hospital and the Loomis Sanatorium, $5,000 each, by the will of the late Nelson S. Clark.

The Home for the Aged of the Little Sisters of the Poor, New York, $5,000; All Souls Hospital, Morristown, N. J., and St. Mary's Catholic Orphan Asylum, Newark, N. J., each $3,000, by the will of the late Bernard J. Coleman.

The Jewish Hospital, Philadelphia, $100,000, for the erection of a wing for the aged and infirm, and the Jewish Foster Home and Orphan's Asylum, Philadelphia, $60,000, by the will of Miss Julia Mayer.

The Children's Home, New York, $2,000, by the will of the late Christian Kress.

St. Luke's Hospital, Bellingham, Wash., $10,000, by the will of the late John Williams, Deming, N. M.

Mr. Benjamin N. Duke, Durham and New York, has recently contributed $5,000 to cancel debts of the new Lincoln Hosital at Durham for colored people. In fireproof structure and character of building and equipment this new hospital ranks with the best in the state. Mr. Duke had previously contributed $25,000 in its construction.

The Salem Hospital, Salem, Mass., $150,000, the Society for the Relief of Aged and Destitute Women, Salem, $10,000, and the Bertram Home for Aged Men, $5,000, by the will of the late Robert Osgood of Salem.

The Elliott Hospital, Manchester, N. H., $10,000, of which a sufficient sum shall be set aside for a free bed for inhabitants from Candia, by the will of the late Henry W. Moore of Candia.

St. Barnabas Hospital, Newark, N. J., $15,000, by the will of the late Charles H. Hampton of East Orange.

Seton Hospital, and Sisters of the Poor of St. Francis and Home for the Aged of the Little Sisters of the Poor, New York, with others, share in the residuary estate, amounting to about $8,000, of the late Mary Jackson.

Lake County Memorial Hospital, Painesville, Ohio, $10,000, by the will of the late Stella L. Cummings, to endow a charity ward.

The will of the late Marion E. Griffin, Spencer, Iowa, provides for a bequest of $50,000 to equip a county hospital, to be erected if authorized by a vote of the people of Clay County within five years; $5,000 to the Orphans' Home of Council Bluffs, Iowa; $5,000 to the American Home Finding Society, Ottumwa, Iowa; $10,000 to the Salvation Army of Iowa, and $10,000 to the American Red Cross of Iowa.

Mount Sinai Hospital, New York, $1,000, by the will of the late Mrs. Clara A. Fenchtwanger.

St. Catherine's Hospital, Brooklyn, $800, by the will of the late Helena Pappon, Jamaica, L. I.

Mount Sinai Hospital, New York, $5,000; Presbyterian Hospital and St. Luke's Hospital, New York, and the New York Association for the Blind, each $500; the United Hebrew Charities, New York, $2,000, by the will of the late Morris J. Hirsh.

The Associated Hospitals of New York, $169,827, and the Servants of Relief for Incurable Cancer, New York, $339,654, by the will of the late Henry Evans.

The Fifth Avenue Hospital, New York, $200, by the will of the late Marguerite A. Goeks.

The Greenwich Hospital, Connecticut, and the Roosevelt Hospital of New York, each $5,000, by the will of the late Elijah W. Sells.

The Skin and Cancer Hospital, New York, and the Old Ladies' Home, Hackensack, N. J., each $1,500, by the will of the late John Flood.

The Skin and Cancer Hospital, New York, and the Old Ladies' Home, Hackensack, N. J., each $1,500, by the will of the late Edward F. Gordon.

The Harvard University Medical School, Boston, $5,000, by the will of the late Dr. John W. Elliott.

Mount Sinai Hospital, New York, $3,000; the Montefiore Home for Chronic Invalids and the Home for Aged Infirm Hebrews, $2,000 each; the Lebanon Hospital Association and Beth Israel Hospital, $1,000 each; the Hebrew Orphan Asylum, $5,000; the Henry Street Settlement, the Association for the Blind, the Tuskegee Institute and the Jewish Consumptive Relief Society of Denver, each $500, by the will of the late Moses Ottinger, New York.

FOREIGN

Gift for Medical Building.—Mr. M. Tatsuke has donated 500,000 yen for the erection of a hospital and medical institute building in Osaka at the Kyoto Imperial University, and the gift has been accepted. The medical institute probably will be named the Tatsuki Institute.

Record Low Birth Rate in England.—The registrar general of England issued statistics, December 2, it is reported, which showed that fewer children were born in England last year than in any previous year on record except during the World War. The birth rate was said to be 18.8 per thousand, which is slightly below that of France (18.9).

Dr. Farkas Receives Orthopedic Prize.—The five-year prize known as "The Humbert I Prize" has been awarded to Dr. Aladar Farkas, Budapest, for his work on "Causes and Pathogenesis of Scoliosis" by a committee made up of Profs. Vittorio Putti, Riccardo D. Vedova and Francesco Delitala. The previous recipients of this prize have been Drs. Vulpius, Schulthess, Vangetti and Murk Jansen (Germany, Switzerland, Italy and Netherlands).

Acid Rain.—During the last year, according to the *Lancet*, 615 tons of organic matter—nitrates, bitumen, calcium salts, sulphates and chlorids—came down with the rain on each square mile of Liverpool's most densely populated districts. The bronze of the Queen Victoria monument was so acted on by the sulphuric acid in the rain water that the copper sulphate formed sunk to a distance of 4 inches in the Portland stone on which the monument stands.

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Taxes Peril the Nobel Prizes.—For the first time since the Nobel prizes were given twenty-four years ago, the directors have decided this year to withhold all five of the prizes. *Science* notes that the reason for this decision is said to be a lack of qualified candidates and a need for funds for the Nobel Library and the Physical and Chemical Institute, both of which were founded in Stockholm as a part of the Nobel memorial. High taxes seem to be imperiling the Nobel prizes, it is said. The taxes on the prizes in 1901 were 83,042 crowns and in 1923 were 578,006 crowns, whereas in this period the prizes decreased from 709,234 to 574,676 crowns. The Nobel family has petitioned the Stockholm government to exempt the foundation from taxes. There are Nobel prizes in physics and chemistry, awarded by the Swedish Academy of Science; in medicine or physiology, awarded by the Stockholm Faculty of Medicine; in literature, awarded by the Swedish Academy of Literature, and the Nobel peace prize, awarded by a committee of five elected by the Norwegian Storthing.

Deaths in Other Countries

Dr. **H. Fehling**, Baden, for many years professor of gynecology at Strasbourg, aged 78.——Dr. **L. W. Weber**, director of the municipal hospital for nervous affections, Chemnitz. ——Dr. **H. Kuhnt**, emeritus professor of ophthalmology, Bonn, one of the two founders of the *Zeitschrift für Augenheilkunde* in 1899.——Dr. **P. J. Schultz**, chief of the orthopedic department of the Münster surgical clinic and author of works on deformities and bone lesions. His skull was fractured in a fall during a boxing bout.——Dr. **Paul Heger**, emeritus professor of physiology, Brussels, aged 80.——Dr. **Lambinet**, Liége, chief of the bacteriologic service at the university and a pioneer in study of hookworm.——Dr. **Boppe**, Nancy, army *médecin inspecteur*, killed in an automobile accident.——Dr. **F. St. George Mivart**, London, formerly medical officer of the Ministry of Health, November 5, aged 70.——Dr. **John Newport Langley**, professor of physiology, University of Cambridge for the last twenty-two years, for more than thirty years editor of the *Journal of Physiology*, formerly president of the new Neurological Society of Great Britain, and Baly Medalist of the Royal College of Physicians of London in 1903, November 5, aged 73.——Dr. **Edward J. Donville**, consulting surgeon to the Royal Devon and Exeter Hospital, recently, aged 76.

CORRECTION

Chief Surgeon at Union Hospital.—THE JOURNAL noted, September 26, that Dr. Duke R. Gaskins, Harrisburg, Ill., had been appointed chief surgeon and manager of the Union Hospital, West Frankfort. Dr. J. E. Williams is chief surgeon at this hospital, and Dr. Gaskins' appointment was as assistant surgeon and manager.

Government Services

Annual Report of Surgeon General

The mortality and the venereal disease rates in the army are the lowest in history, according to the annual report of Surg.-Gen. Merritte W. Ireland. The general death rate for 1924 was 3.82 per thousand, as compared with 3.91 the preceding year, when the rate for the first time in army history fell below 4 per thousand. The death rate for disease in 1924 was 1.94 per thousand, which is the first time it has been below 2 per thousand. In the last twenty-five years the incidence of venereal diseases has declined 69 per cent. and that of malaria 98.7 per cent. During the year, the medical department of the army demonstrated the method of transmission of dengue by mosquitos, and the research on this problem was as complete, according to medical officers, as that conducted on yellow fever by Walter Reed and his associates in Cuba following the Spanish-American War. Relatively greater progress has been made in the army in the prevention of deaths from disease than from external causes. Suicide held its place as the chief cause of death, with tuberculosis second, automobile accidents third, and airplane and balloon accidents fourth.

The report showed that in the eight years, 1917 to 1924, there were 874 deaths resulting from airplane accidents, not including World War battle casualties; of that number, 520 were officers. For the last five years the air accident death rate for officers was 26.95 per thousand, while in 1924 the rate was 21.04. "The ratio of crashes for the heavier-than-air machines," General Ireland said, "has decreased from one crash to 200 flying hours in 1921, to 1 crash to 500 flying hours in 1924, and the fatalities from one to 955 flying hours in 1921 to one to 3,365 flying hours in 1924." A tabular presentation of the 256 crashes in 1924 showed that 138 occurred in landing, that "poor piloting and inexperience" was held responsible for 84, and engine trouble for 58. While 40 were killed or died as a result of injuries, 35 were seriously injured and 55 were slightly injured; 284 persons in planes, which crashed, escaped injury entirely. Establishment of airplane ambulances at each air service station is recommended, together with the creation of an airplane ambulance squadron of twenty-five planes for each field army organization. The planes would have a capacity for six litters or eight sitting patients. A squadron of this type, the report states, "can transport as many patients 100 miles in one hour as a railway hospital train in four or more hours," and can receive patients much nearer the fighting area.

Veteran's Bureau Resignations

The following medical officers of the U. S. Medical Bureau resigned on the dates indicated: Dr. James S. Burger, hospital No. 65, St. Paul, Minn., October 31; Dr. Howard T. Child, hospital No. 95, Northampton, Mass., August 8; Dr. Lyle G. Ellis, hospital No. 97, Chillicothe, Ohio, September 28; Dr. John H. Graff, September 19; Dr. Antonio Mayoral, hospital No. 80, Fort Lyon, Colo., September 15; Dr. Walter D. Martin, Central office, Washington, D. C., July 31; Dr. Oliver J. Miller, hospital No. 27, Alexandria, La., August 30; Dr. Elmer L. Smythe, hospital No. 59, Tacoma, Wash., October 15, and Dr. William M. Stinson, hospital No. 72, Harrison, Mont., August 15.

Army Personal

Major Charles E. MacDonald, M. C., has been recommended to the adjutant general by Mr. George Curry of the International Boundary Committee for the Distinguished Service Cross for service with him in Samar, P. I., from 1905 to 1907.

Noncommissioned Officers of Medical Department

A course of instruction for noncommissioned officers of the army medical department has been started at Carlisle Barracks, Pa., to assist in raising the standard of noncommissioned officers. This year's class has fifty-two members —twenty-six from the regular army, twenty-two from the National Guard, and four from the U. S. Navy. At the opening exercises of the school, addresses were given by Lieut.-Col. Charles R. Reynolds, Commandant, and Major Garfield L. McKinney, director of the school. The total number of demerits any member of the class can get and still be eligible for graduation from the course is twenty-five.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 28, 1925.

Lay Radiographers and Medical Reports

The Society of Radiographers has passed a rule preventing lay members from making any report or diagnosis on any roentgenogram or screen examination, but it was agreed that this rule should be interpreted to allow a lay radiographer (in the absence of a medical radiologist) to describe to a physician the appearances seen in a roentgen-ray examination, so as to assist him in making a diagnosis. The Institution of Electrical Engineers, which took part in the foundation of the Society of Radiographers and nominated six out of the eighteen members of its council, has withdrawn its nominees and terminated the institution's connection with the society, because it considered that the new rule would materially lower the professional status of nonmedical radiographers. An attempt had been made previously by a representative of the institution to modify the proposed rule by moving that it be amended so as not to be applicable to members of the society who had been engaged in roentgen-ray work for not less than fifteen years. Such members would thus be allowed to interpret roentgenograms, make screen examinations and diagnoses, and treat patients. Objection was taken to this by the General Medical Council, which pointed out that if such a clause was inserted in the rule the medical members of the society would find themselves in the untenable position of associating with unqualified persons who were performing medical functions without medical training or without immediate personal medical supervision. This decision the medical members of the Society of Radiographers could not, of course, dispute. Nevertheless the Institution of Electrical Engineers maintained its position. A large proportion of the radiographers, however, have expressed agreement with the new rule.

The Demand of Osteopaths for Registration

As stated in previous letters, there are now a large number of osteopaths in this country, and a few physicians have joined their ranks. Osteopathy is evidently, for the time at any rate, a paying proposition, and the agitation for the legal status that would be conferred by state registration continues. In a letter to the *Times* advocating registration, the vice president of the British Osteopathic Association has the audacity to describe osteopathy as "a system which has scientifically classified the entire field of mechanicotherapeutics" and refers to the manifesto of his association in which osteopathy is defined "as that system of the art of healing which regards the structural integrity of the body as the most important single factor in the maintenance of health." He asserts that osteopaths have to undergo a training as rigorous as that required in any other branch of the medical profession. He complains that there are three times as many unqualified "pretenders" as there are "qualified osteopaths." He goes on to talk of "the attacks of the general medical council on the fully qualified osteopaths." This is absurd, for the general council does not concern itself with irregular practitioners at all and, indeed, has no power over them, its jurisdiction being confined to qualified physicians. In a letter to the *Times,* written with all his characteristic cleverness, Bernard Shaw, who is always a destructive critic and an advocate of the revolutionary and the paradoxical, falls into the same error. He describes the general medical council as a "trade union of the most antisocial type" and as "preventing the public from addressing itself to the task of calling in any unregistered practitioner who is in competition with those on the register, while at the same time allowing the qualification for that register to remain in many respects not merely useless and out of date, but positively poisonous and murderous." Shaw considers the qualification out of date because physicians are not taught what he regards as the wonderful technic of bone-setters, osteopaths and other irregulars. His rôle as a destructive critic, in which he revels, has of course prepared him for this attitude. But as a man of the world, if for no other reason, he should know that neither the general medical council nor laws of this country prevent any one from practicing any art he likes to profess. This is a very free country, and we have nothing corresponding to the French "illegal practice of medicine."

Cancer Research

At a meeting of the general committee of the Imperial Cancer Research Fund, Sir Humphry Rolleston, chairman of the executive committee, reviewed the report on the year's work made by the director, Dr. J. A. Murray, F.R.S. Dr. William Cramer had investigated the influence of innervation on the experimental production of skin cancer by tar. He deprived an area of skin in mice of the nerve supply and then painted it twice weekly until cancer supervened. This occurred only after a longer course of tarring than was necessary in normal animals. Therefore, absence of nerve supply certainly did not predispose to the genesis of cancer, as had been suggested. The nerves grew again into the denervated area, so that the experiment did not give an absolute answer to the question whether, if the renewal of the nerve supply could be prevented, cancer would not be produced at all. Dr. G. M. Findlay made experiments to determine whether it was possible to reproduce in animals the remarkable sequence reported in the human subject from time to time, in which an accidental tar burn had been followed after a short interval by typical progressive carcinoma at the point of injury. A large number of mice received a single application of hot tar on a small area of the back. Slight swelling and reddening of the skin followed but soon subsided. No further change was observed until the lapse of a year, when three mice showed typical cancer at the site of inoculation application. This result is important, as it shows that general intoxication with tar, which has been invoked by many workers as important in the causation of tar cancer, is, to say the least, not essential. Dr. A. M. Begg has made investigations on the Rous fowl sarcoma and the infective lymphosarcoma of the dog. This work took a new orientation since the publication of the work of Dr. W. E. Gye, who is now collaborating informally with Dr. Begg. Dr. Begg's investigations are progressing satisfactorily and, it is hoped, will soon be ready for publication. The important work of Gye and Barnard is calling for the most careful repetition with as many kinds of tumors as possible. This work is now occupying much of the time of the scientific staff of the Cancer Research Fund.

A Postgraduate School for London

It seems as if the difficulties of establishing a postgraduate school in London, against which medical reformers have struggled in vain for many years, will at last be overcome with the aid of the government. Mr. Neville Chamberlain, minister of health, speaking as the chief guest at the annual dinner of the Royal Society of Medicine, said that the establishment of a postgraduate school in London ought to be brought into operation at the earliest possible moment. Many valiant efforts to do something of the kind had been made in the past, but without success. The time, he thought, had come to try again. Perhaps with cooperation between the medical profession and the ministry of health, and with the good will of some of our medical colleagues beyond the seas, it might be possible to put this question on a new footing. He had already been able to secure the assistance of a number of eminent representative physicians and surgeons to serve on a committee over which he was going to preside. He trusted that in the next year or so they might congratulate themselves on the accomplishment of their desires.

The National Collection of Type Cultures

The Medical Research Council has just issued a second edition of the catalogue of the collection maintained at the Lister Institute of Preventive Medicine. More than 2,000 living strains of bacteria and protozoa affecting animals and plants are maintained. In the single year of 1924, more than 4,000 cultures were distributed to workers. The catalogue gives an alphabetical list of these microbes with their sources. For many years the Lister Institute has assisted bacteriologists at home and abroad by maintaining a limited collection of strains. Before the war there was a collection at the Pasteur Institute, Paris, another at Prague and a third in the Museum of Natural History in New York. But these were limited in range. Early in 1920 the Medical Research Council arranged, with the cooperation of the Lister Institute, to expand the collection into its present form, adding, with the assistance of the British Mycological Society, type cultures of fungi. It is now becoming possible for any research worker, health officer, or the scientific adviser to any industry, to obtain authentic living cultures of most of the living strains of microbes to compare with the organism with which he is working. The collection contains thirty living species of the genus *Aspergillus.* There are examples from soy products used in making pickles in China, from the dust of the London tube railways, from the mealy bug of the sugar cane and from many wild animals in the London zoo. Of the tubercle bacillus there are more than twenty strains—from human cases of lupus, bovine types, avian types, one from a kangaroo, and cold-blooded types from alligators, tortoises, frogs and fishes. There is culture of *Bacillus botulinus* obtained from the only outbreak of botulism that has occurred in this country (in Scotland in 1922). There are examples of the organisms of trypanosomiasis and of nagana disease in tropical Africa.

PARIS

(From Our Regular Correspondent)

Nov. 16, 1925.

Conjugal Neurosyphilis and Its Pathogenesis

M. Sézary, in a recent article, calls attention to conjugal neurosyphilis. In such cases both husband and wife are affected with hidden or unrecognized syphilis and present at the same time or successively signs of a nervous affection either parenchymatous (tabes, general paralysis), arterial (hemiplegia, paraplegia) or meningeal (jacksonian epilepsy, paralysis of the cranial nerves). While such cases are not frequent, they are important. Conjugal neurosyphilis constitutes one of the strongest arguments for belief in the neurotropic strain of spirochete. This theory, supported by some authors, is far from being accepted by all neurologists and syphilologists. The fact is, it is exceedingly rare for syphilis in husband and wife to manifest itself exclusively by nervous lesions; frequently one or even both are affected, at the same time that the nervous affection appears, by a characteristic syphilitic aortitis, leukoplakia or gummatous or papulotuberculous cutaneous lesions.

In further support of the belief in the neurotropic strain of spirochete, it has been noted that the offspring of a parent or parents with neurosyphilis has contracted the disease. Such cases are rare, and in some cases the child of such parents is affected with syphilis of the skin or bones. The existence of a strain exclusively neurotropic is, therefore, contradicted by the observed facts. Hereditary predisposition seems to be present in certain cases in which neurosyphilis develops in various members of the same family, contaminated by different sources. It has never been proved that the husband and wife affected by neurosyphilis came from families in which such predisposition existed; furthermore, the part played by hereditary or familial predisposition in the etiology of nervous diseases has been exaggerated.

As to environment, frequently the two partners to the marriage have occupations so widely different that the vulnerability of their nervous system cannot be explained in this way. The alleged effect of conjugal alcoholism is not plausible; the supposed favorable action of alcoholism on neurosyphilis has, moreover, been contested by numerous authors. The social factor plays no part; persons affected with neurosyphilis belong to all classes of society. Nor can inadequate treatment explain conjugal neurosyphilis. No doubt inadequate treatment favors its development, but there is no apparent reason why neurosyphilis should be found in syphilitic married couples who have received inadequate treatment rather than aortic syphilis or syphilis of the skin and bones.

According to Sézary, the pathogenesis of conjugal neurosyphilis will be readily understood by taking in account two factors: (1) the relative rarity of conjugal neurosyphilis, and (2) the fact that if one discriminates between neurosyphilis proper (tabes, general paralysis) and arterial and meningeal neurosyphilis, which are only special types of vascular or other forms of syphilis, it will be seen that the cases of conjugal neurosyphilis proper are rare. For instance, Marie and Beaussart were able to collect during a five-year period, in the large Villejuif psychopathic hospital, only twenty-six cases of conjugal neurosyphilis proper. Neurosyphilis, however, has wide incidence. From observations of patients in the Charité Hospital, Sézary concludes that in old cases of syphilis the manifestations are nervous in two out of three cases. Under these circumstances, there is no need to explain neurosyphilis by neurotropism of the spirochete or predisposition of the patient. It is not surprising that syphilis expresses itself in husband and wife by its most frequent manifestation.

Nontuberculous, Tracheobronchial Adenopathy

Guinon and Levesque, endeavoring to establish more definite criteria for the diagnosis of tuberculous juxtamediastinal lesions, have sought to discover what roentgenologic images represent bronchopulmonary sequelae of acute respiratory diseases. Their results appear in an article in the *Archives de médecine des enfants.* Selecting from patients with tardy respiratory sequelae of infectious diseases (pertussis, measles, acute bronchopneumonia) those who were free from tuberculosis, they found either (1) the absence of all roentgenologic anomalies or (2) quite frequently a roentgenologic image of great diagnostic value. This image is juxtamediastinal but always in the lower half of the thorax, to the right, along the right border of the heart. The image always occupies the space just above the diaphragm, usually extending to it, and lies below the normal bronchovascular shadow. There is never a roentgenologic anomaly along the trachea or at the level of the hilum. It is not a round shadow with clear outlines, but shows lightly shaded bands lengthened obliquely at the base and forming a triangle with the diaphragm as the base, more or less divided, like the jaws of forceps, at the apex of the hilum. Sometimes the external margin of the principal mass sends out horizontal prolongations toward the costal wall. These images show great mobility from coughing or respiration. Finally, the diaphragm is often misshapen; during respiration, it presents the festoon sign described by Maingot. The authors conclude that these images are not indicative of adenopathy and that everything points to their parenchymatous origin. This, together with the ordinary bronchopulmonary syndrome, leads them to think that the respiratory sequelae of infectious diseases consist of various parenchymatous lesions ranging from chronic bronchopneumonia, probably the cause of the roentgenologic modifications previously cited, to the main syndrome of bronchopneumonia with dilatation of the bronchi. Nontuberculous chronic adenopathy never appears, provided the examination is made immediately after convalescence from the acute stage. It is therefore very easy to distinguish the roentgenologic images described above from tuberculous juxtamediastinal images. The latter are located at the hilum, in the angle which the large vessels of the base form with the heart, or at the borders of the trachea. They have a rounded aspect, with frank outlines which point to adenopathy even when they are located in the lower part of the thorax on either side of the heart; one should not confuse them with the special roentgenographic image described above.

PRAGUE

(From Our Regular Correspondent)

Oct. 21, 1925.

Public Health and the Budget

The parliament has just approved the state budget of the ministry of health for 1926. Because the Czechoslovak currency has been stabilized for three years, it is possible to compare the budgets for those years. While the budget for 1925 amounted roughly to 126 million Czechoslovak crowns, the total for 1926 is 146 millions. There are no radical changes in the budget for the next year. The law on the restriction of state personnel prescribed a reduction of 10 per cent. in the personnel of all branches of public service, but it has been decided that the health service shall be reduced only 4 per cent. The largest item in the budget, 39 millions, is for state institutions, including hospitals and state laboratories. The second largest item, 31 millions, is for salaries of health officers. The third largest item, 10 millions, is to maintain indigent patients in public hospitals. Eight millions is appropriated for the fight against such diseases as tuberculosis and venereal diseases. Four millions goes to child welfare, 5 millions for the improvement of public water supplies and sewage disposal plants, and 2½ millions for the construction of hospitals. The health service for the autonomous territory of Carpathian Russia has a special chapter with 11½ millions. While the Czechoslovak crown is valued at 34 crowns to one American dollar, this makes an expenditure of about 30 cents per head for public health purposes.

New School for Social and Public Health Workers

A new school for public health visitors has been opened in Turocz Szt. Marton, Slovakia. The school was organized by the Czechoslovak Red Cross and has been taken over by the county authorities. It is located provisionally in a summer hotel but is to be moved next semester into a new building which is nearly completed. There has long been a need for such a school because Slovakia had no qualified workers in the field of social work and public health. Forty Slovakian girls, all graduates of the domestic science schools, have been accepted for a two years' training. Besides instruction in the theory of social work and public health, they will receive practical training in home visiting. The hospital is not yet big enough to give them the bedside training necessary to qualify them as public health nurses. The practical training will be in the hands of a graduate nurse who has had the international course in public health nursing given under the auspices of the League of Red Cross Societies in England. It is planned to organize in the district in which the school is located a public health demonstration in which the county, the province and the state shall participate and which shall be in charge of a full-time health officer. The idea is to show the girls how a modern health service should be organized so that they may imitate it when they go out into practical life. It is intended to use the same district for the practical training of health officers. Their theoretical preparation is to be given in the state institute of hygiene in Prague, but they must produce evidence that they have undergone practical training in a demonstration district before they may be admitted to final examination.

Orthopedic Congress

The first congress of the Czechoslovak Orthopedic Society, successfully organized by Professor V. Chlumsky, was held in Bratislava, September 27 and 28. More than 150 guests participated. In addition to all three medical faculties of the Czechoslovak Republic, the Polish surgeons and the Jugoslavian medical profession were represented, Professor Lesniowsky coming from Warsaw and Dr. Grospic from Jugoslavia. Professor Chlumsky, who is the chief of the orthopedic clinic at the Bratislava Medical School, was in the chair. He presented a paper on the causes and the modern treatment of incipient scoliosis. Other papers deserving special mention are: the lecture of Professor Tobiasek of Prague on orthopedic gymnastics and their relation to the different systems of physical education; the paper of Dr. Zahradnicek of Brno on the clinical significance of the numerical and morphologic anomalies of the vertebrae, and a lecture of Dr. Burian on plastic operations on the face and extremities. Several resolutions were adopted by the congress. One recommends improvement of the orthopedics branch of medical education by devoting one of the four compulsory semesters in surgery to orthopedics. Another one asks for independent chairs and departments of orthopedics such as have been created in Bratislava with Professor Chlumsky as the chief. This change has brought about a remarkable development of orthopedic service in the Bratislava Medical School. The department should be charged with educating makers of orthopedic appliances who at present, although they have no special education, often advise the public as to the apparatus to be applied and consequently do much harm in many cases. The application of orthopedic procedures should be reserved strictly for specialists, who should be qualified medical practitioners with special postgraduate training in orthopedic clinics.

Operation for Cerebellar Tumor

Professor Schloffer and Professor Poetzl of the Prague German Medical Faculty have recently reported a unique operation, which has been successfully performed. The diagnosis of tumor in the cerebellum was made on a man, aged 40. Because the condition of the patient grew steadily worse, operation was decided on. The operation disclosed a tumor in the right half of the cerebellum and made necessary the removal of almost the whole of this portion of the cerebellum. Fifteen days after the operation the patient was able to leave his bed, and ultimately he returned to his normal occupation. Although he has been under observation for several months, he is feeling well and continues in his previous occupation. The scientific literature contains one case of a similar operation, which was performed by de Stella, whose patient survived the operation but died eight weeks later. Professor Schloffer believes that the beneficial result of his operation is due to the fact that he succeeded in preserving the nucleus dentatus and the whole system of cerebrifugal connections.

Retirement of Professor Jaksch Wartenhorst

Professor Rudolph Jaksch Wartenhorst is retiring as chief of clinic for internal medicine of the Prague German Medical Faculty. He was born in 1855, the son of the famous internist, who was also professor of internal medicine in Prague. After his studies under Klebs, Nothnagel and Przibram in 1883 he became lecturer on internal medicine at the German Medical Faculty in Prague, where he has remained ever since. In 1888 he was appointed professor of internal medicine and developed into the foremost figure of the teaching staff of his institution. His publications are concerned chiefly with metabolic diseases as evidenced in the components of the urine. In the early nineties he initiated the campaign against tuberculosis in Bohemia. In 1893 he founded the German Association for the Erection of Tuberculosis Sanatoriums in Bohemia. In 1903 he transformed the association into a society for aid to the tuberculous, enlarging at the same time the whole scope of the antituberculosis campaign by including in its program especially the erection of antituberculosis dispensaries. Since 1922 he has been the head of the German Federation of Antituberculosis Associations in the Czechoslovak Republic. Professor Eppinger, who has been occupying the chair of internal medicine at the Medical Faculty in Vienna, has been appointed as the successor of Professor Jaksch. Professor Eppinger will begin his lectures in Prague in the summer semester of 1926.

Meeting of Surgicogynecologic Society

The meeting of the Czechoslovak Surgicogynecologic Society was devoted to discussion of the proposal made by its late president, Professor Kukula, shortly before his death. Professor Kukula suffered from angina pectoris, to which he ultimately succumbed. In the last months of his life he paid especial attention to the study of angina pectoris and its treatment. It was shown at his clinic that cervical sympathectomy brings relief in from 60 to 70 per cent. of cases but is often followed by undesired after-effects, such as hemorrhagic pleural effusion, irregularities of deglutition and irritation of the third branch of the trigeminal nerve. All these complications Dr. Jirasek, formerly Dr. Kukula's assistant, attributes to the mechanical irritation of the upper portions of the sympathetic. In order to obviate these complications, Professor Kukula proposed resection of the sympathetic plexus around the aorta. The anatomic possibility of this operation was studied by Dr. C. H. Weigner, professor of surgical anatomy at Prague. He believes that it would be possible to resect the branches of the sympathetic in the anterior mediastinum along the large blood vessels. This operation would have the advantage of avoiding undesirable by-effects. The members of the Surgicogynecologic Society think that the project has been studied so far that it deserves a trial in an actual case with a chance of success.

Changes in Czech Medical Faculty in Prague

Two important changes have occurred recently in the teaching staff of the Czech Medical Faculty in Prague. The chair of pathologic anatomy, after the late Professor Hlava, was given to Prof. Rudolph Kimla. Professor Kimla is the oldest pupil of Hlava, and has been professor of experimental pathology in Prague. In his opening lecture he described his own scientific development by following the history of modern pathologic anatomy. The macroscopic stage of the science was followed by intensive microscopic research and was intensified by the discoveries of Koch and Pasteur. Coordination of these activities showed that mere morphology could not explain all the problems under discussion and therefore it was necessary to pay attention also to the study of pathology. After the World War, social problems began to influence research in theoretical sciences, and international machinery was created for the coordination of research, such as the Health Committee of the League of Nations. Professor Kimla could follow this development on his favored subject, which is primary infection in tuberculosis. According to him, human knowledge can be enlarged only through cooperative research. Prof. A. Ostrcil has been appointed to the chair of gynecology, succeeding Prof. V. Rubeska. Professor Ostrcil has been chief of the gynecologic clinic at the Brno Medical School. In his opening lecture, Professor Ostrcil described the importance of the work of his predecessor for the development of operative gynecology and emphasized the fact that the specialty of gynecology must be built on a fundamental and thorough education in general medicine.

BERLIN

(From Our Regular Correspondent)

Nov. 7, 1925.

Physical Development of School Children in 1924

Prof. Rudolf Martin of Munich (recently deceased) has given the results of his somatometric and somatoscopic researches on 7,065 children—3,573 boys and 3,492 girls—attending the public schools of Munich. Since 1921, the children of the same seventeen schools have been subjected to regular yearly examinations. The number of children examined in the various age-groups (with the exception of the 10½ age-group) is so large that the averages are reliable. Twenty-one body measurements were made on each child, from which further values were computed. Six descriptive characters were noted in each child and any peculiarities were recorded. Martin sought to establish to what extent the influence of the recent war could be observed in the physical development of our youth. The various age-groups were subjected to these damaging influences varying periods of time; nor were the various war and postwar years equally harmful in their effects on child life. The worst years were those of the food blockade and the year 1923, which witnessed the climax of inflated currency. In these years many parents were unable to secure for their children a sufficient quantity of even the most essential foods. A good deal depends, too, on what stage of physical development the children had reached when their bodies were deprived of foodstuffs that constituted the building material for their normal future development. In 1923, in children that were born during the first years of the war and were thus subjected throughout their early childhood to the damaging influences of poor food, a distinct decline in almost all body measurements, as compared with the physical development recorded in 1921, was noted. Not only were measurements taken, but the general state of nutrition was inspected, the same method being followed that the Quakers used in the medical examinations made in connection with the feeding of German children. An average nutrition was the state most commonly found in all age-groups and both sexes, and the proportion fluctuated between 39.5 and 54.3 per cent. Thirteen per cent. of the children were found to be "badly" or "very badly" nourished. More of the boys were found in the group nourished below the average and more of the girls in the group nourished above the average. Measurements of the girls from 6 to 10 years old showed more subcutaneous fat and more rotundity of the female figure.

The boys were, on the average, taller than the girls. The half-year gains in height corresponded to normal rates of increase. Boys weighed more until the tenth year, when a gradual reversal took place. The chest girth (taken after exhalation) was much less in the girls than in the boys, even with increasing age. Chest girth increased more slowly than height; the relative chest girth dropped from 50.9 in boys aged 6 to 49 in boys aged 9½, after which it began slowly to increase. The corresponding decrease in the girls was from 49.8 to 47.7. Taken absolutely and also in relation to height, the trunk length increased in the two sexes quite uniformly. Not until the seventh year did the growth become more rapid. Until the tenth year was reached, trunk length in the girls, taken absolutely and also in comparison with the height, was less than that of the boys. The relative trunk length dropped continuously from 55 to 54 in the boys, and from 55.6 to 53.7 in the girls. With the length of the legs it was just the opposite. The leg length increased much more rapidly than the trunk length. In boys the increase in leg length between the ages of 6 and 10½ was 11.2 cm.; in girls the increase was 12.5 cm., as compared with an increase in trunk length, during the corresponding period, of only 7.1 and 7.8 cm., respectively. It was evident, therefore, that, in the girls as well, the absolute and the relative values of leg length were greater than in the boys. On the other hand, up to the tenth year, the breadth across the shoulders and the width of the pelvis were almost equal in the two sexes. The typically feminine breadth of trunk does not develop, therefore, until at a later age.

The past year has brought an improvement in the growth of school children of the ages 6 to 10, especially in height and weight. In the children aged 8½, there was an increase of 3.2 cm. in the boys and 2.8 cm. in the girls. In the younger age-groups, though not in the older, the values recorded in 1921 have again been reached. The absolute and relative changes of chest girth in the various age-groups were slight.

Body Build and Physiognomy

Before the Berliner Physiognomische Studiengesellschaft, Dr. Löwenstein, neurologist of Hanover, spoke recently on body build and physiognomy. With the aid of numerous diagrams and portraits, and taking the researches of Professor Kretschmer of Tübingen as a basis, he explained the connection between the body build and the symptoms of mental disturbance, decay and degeneration. In the study of abnormal mental manifestations, psychiatrists no longer confine their observations to the brain and skull formation. On the contrary, in connection with endosecretory processes, the form and structure of the whole body are studied (of which the face may possibly be taken as merely a symptomatic portion). Kretschmer distinguished three different types of body build: (1) the leptosarks, or the slender, usually having a small head, a slender neck and a sunken chest; (2) the athletes, with broad chest and marked muscular development, and (3) the pycnics, or thick-set, with compact body build, short legs, protruding paunch, head thrown forward, a rounded back and usually a heavy beard. The leptosarks and the athletes, if they become affected with mental disease, present the same symptoms, because they have fundamentally the same temperament. Fully developed mental disease in these first two groups affects the intellectual centers; for thinking and feeling are disturbed and their relations to the external world are much affected. Opposed to these two groups (termed schizoids) is the third group, the pycnics, in whom, as a rule, only periodic depression occurs, which does not affect the intellectual centers or relations with the external world. One can observe a temperamental character even in subjects who are mentally sound. For example, Gottfried Keller, Fritz Reuter, H. Seidel, Luther, Blücher, and, among the artists, Thoma and Hals, presented a typically pycnic body build, and their published works give evidence of the corresponding mental temperament. While not naturally given to systematic, logical thinking, there is a vein of humor pervading their works; they have a preference for long-drawn-out epical style and give evidence of an altruistic character. On the other hand, the schizoids (the slender and the athletic types) seek retirement; their acts are usually characterized by pronounced egoism, by reason of which their own personality becomes the center of every interest. They are the great systematic thinkers. We may mention Kant, Newton, Spinoza, Rousseau, Calvin, Schiller, Körner, Feuerbach, Michelangelo and, finally, Strindberg, whose mental affection was of a marked schizophrenic type.

Marriages

Albert C. Van Reenen, Covington, Va., to Miss Gladys Camillia Vermillera of Richmond, October 28.

William Edward Smith to Miss Mary Elizabeth Berkeley Moring, both of Farmville, Va., October 22.

Bolling Jones Atkinson to Miss Eugenia Clementine Vincent, both of Emporia, Va., October 31.

Victor Mackay Daly to Mrs. Anna Raymond, both of Pontiac, Ill., at St. Paul, September 16.

Robert Burwell Groves, Lowell, N. C., to Miss Moody Schools of Richmond, Va., October 10.

Robert Matthews, Norfolk, Va., to Miss Mary Willis McLemore of Suffolk, October 24.

Richard E. Shope, Iowa City, to Miss Helen Ellis of Linville, at Des Moines, recently.

Beverley F. Eckles to Miss Annie Gill Dixon, both of Richmond, Va., October 31.

Ernest L. Coffin, St. Louis, to Miss J. Rebecca Jarvis of Webster Groves, October 3.

Donald E. Bell, Newcastle, Ind., to Miss Margaret Benoy of Indianapolis, recently.

Deaths

John Lewis Hildreth, Winchester, Mass.; Dartmouth Medical School, Hanover, 1868; member of the Massachusetts Medical Society; emeritus professor of clinical medicine, and formerly dean, Tufts College Medical School, Boston; at one time member of the Cambridge (Mass.) School Board, and on the staff of the Cambridge Hospital; member of the Massachusetts State Board of Lunacy and Charity, 1895-1898; aged 87; died, November 27.

Thomas Roy Martin ⊕ Duluth, Minn.; University of Minnesota Medical School, Minneapolis, 1907; formerly demonstrator of pathology and bacteriology at his alma mater; past president of the St. Louis County Medical Society; member of the Minnesota Pathological Society, the American College of Physcians, and the Radiological Society of North America; aged 43; died, November 15.

Thomas Grant Alcorn, Thompsonville, Conn.; College of Physicians and Surgeons, Boston, 1898; member of the Connecticut State Medical Society; past president of the Hartford County Medical Society; formerly state senator; aged 56; died suddenly, November 27, of cerebral hemorrhage.

Romulus Armfield, Marshville, N. C.; Medical College of Virginia, Richmond, 1881; member of the Medical Society of the State of North Carolina; past president of the Union Medical Society; aged 73; died, November 23, at the Ellen Fitzgerald Hospital, Monroe, of chronic nephritis.

George Albert Fuson, Everett, Wash.; Barnes Medical College, St. Louis, 1899; member of the Washington State Medical Association; formerly health officer of Cascade County (Mont.), and president of the Montana Public Health Association; aged 54; died in November.

William Allison Secrist, Alpena, Mich.; Starling Medical College, Columbus, 1881; member of the Michigan State Medical Society; past president of the Alpena County Medical Society; aged 72; died, November 18, of cerebral hemorrhage.

George Theophilus Kemp, Baltimore; Long Island College Hospital, Brooklyn, 1891; formerly professor of physiology, College of Physicians and Surgeons, Chicago; aged 64; died, November 24, at the Church Home and Infirmary, of pneumonia.

L. Cooper Harman, Philipsburg, Pa.; Jefferson Medical College of Philadelphia, 1882; member of the Medical Society of the State of Pennsylvania; aged 64; died, September 13, of lung abscess and pneumonia, following an operation for gallstones.

George Eugene Harbert ⊕ Beverly, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1899; aged 50; died, November 12, at the University of Pennsylvania Hospital, Philadelphia, of injuries received in an automobile accident.

Charles M. Moates, Leavenworth, Kan.; Meharry Medical College, Nashville, Tenn., 1888; member of the Kansas Medical Society; formerly city physician; aged 63; died, November 17, at St. John's Hospital, of pneumonia.

Richard Joseph Dwyer ⊕ Hartford, Conn.; Jefferson Medical College of Philadelphia, 1908; served in the M. C., U. S. Army, during the World War, with the rank of captain; aged 48; died, October 22, of pneumonia.

Christian Martin Berntsen, Chicago; Northwestern University Medical School, Chicago, 1908; member of the Illinois State Medical Society; aged 41; died, November 28, of bronchopneumonia, following influenza.

Herbert Houston Sawyer, Boston; Boston University School of Medicine, 1893; member of the Massachusetts Medical Society, and the New England Dermatological Society; aged 55; died, November 13.

Ovid V. Burnett, Shelton Laurel, N. C.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1904; aged 50; was shot and killed, November 16.

Jedediah Kilbourne Hayward, New York; Bellevue Hospital Medical College, New York, 1893; aged 54; died, November 15, at the Manhattan State Hospital, of acute myocarditis.

Frank Henry Zitz, New York; Medical Department of Columbia College, New York, 1888; member of the Medical Society of the State of New York; aged 61; died, November 26.

Frances Alice Harper ⊕ Pittsburgh, Kan.; Kansas Medical College, Topeka, 1904; aged 54; died, September 15, at the Mount Carmel Hospital, of cerebral hemorrhage.

Andrew Johnson Baird, Gatesville, Texas; Vanderbilt University Medical Department, Nashville, Tenn., 1879; aged 70; died, November 5, of cardiovascular disease.

Jesse David Moore, New Castle, Pa.; Medical Department of the University of the City of New York, 1885; aged 66; died, November 14, of cerebral hemorrhage.

James M. Boyd, Annapolis, Ind.; University of Pennsylvania School of Medicine, Philadelphia, 1877; aged 78; died, November 16, of heart disease.

James Wales Henry, Jackson, Ohio; Miami Medical College, Cincinnati, 1884; formerly a druggist; aged 85; died, November 22, at Columbus.

Daniel W. Carlisle, Princeton, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1865; aged 87; died, October 30, following a long illness.

Samuel Cecil Oglesby, Girdletree, Md.; University of Maryland School of Medicine, 1892; aged 55; died, November 15, of bronchial asthma.

William De Caux Tilney, Crawfordsville, Ind.; Philadelphia University of Medicine and Surgery, Philadelphia, 1878; aged 84; died, October 11.

Thomas Wisdom Repass, Wytheville, Va.; Medical College of Virginia, Richmond, 1895; aged 58; died, November 8, of cerebral hemorrhage.

Granville H. Albright, Barbourville, Ky.; University of Louisville School of Medicine, 1892; also a druggist; aged 69; died, November 13.

Edward Rushmore, Plainfield, N. J.; Jefferson Medical College of Philadelphia, 1872; aged 80; died, November 24, of pneumonia.

Frank E. Morley ⊕ Viroqua, Wis.; Rush Medical College, Chicago, 1893; aged 63; died, November 21, of cerebral hemorrhage.

Walter Henry Kelley, Boston; Medical School of Harvard University, Boston, 1902; aged 54; died, November 16, of pneumonia.

Jefferson Pugh, Greensburg, Ind.; Indiana Medical College, Indianapolis, 1874; died, September 26, of chronic nephritis.

Charles Thomas McClane, Roswell, N. M.; Eclectic Medical Institute, Cincinnati, 1878; aged 80; died, October 20.

Alphonsus J. Forget, Los Angeles; Catholic University, Louvain, Belgium, 1894; aged 66; died, November 13.

Garrett Pigman, Liberty, Ind.; Bellevue Hospital Medical College, New York, 1883; aged 67; died, October 17.

John Newton Ryan, Coyle, Okla. (licensed, Oklahoma, under the Act of 1908); aged 73; died, November 8.

Anthony Doyle, New Canton, Ill.; American Medical College, St. Louis, 1887; aged 93; died, November 5.

The Propaganda for Reform

In This Department Appear Reports of The Journal's Bureau of Investigation, of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other General Material of an Informative Nature

INCITAMIN NOT ACCEPTABLE FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report. W. A. Puckner, Secretary.

Incitamin was presented for consideration by Lehn & Fink, Inc., New York, with the statement that it is manufactured by A. H. Riise, Copenhagen, Denmark. In the information furnished the Council it was stated that Incitamin is a "standardized preparation of equine saliva, freed of coagulable substances," that "each cubic centimeter contains 12 units of Ptyalin" (the unit is defined and a method for testing given), that it is preserved with 1 per cent. of chinosol. It was stated to be indicated in the treatment of indolent ulcers.

> "According to the theory of the originators, Incitamin owes its therapeutic value to the stimulation of the activity of the blood plasma."

Entirely different statements as to the composition are made on the trade package and the advertising which was submitted. Here it is stated:

> "Incitamin is a mixture containing saliva (equine), serum (also equine), and pancreatic extract. . . . It is preserved by the addition of one-half of one per cent. of phenol."

The Council called the attention of Lehn & Fink, Inc., to the contradictions in the statement of composition and pointed out that no pharmacologic data of any kind was given indicating that such a preparation is useful and that no clinical evidence had been presented for its clinical usefulness. The firm was informed that Incitamin could not be considered on the data as to composition and action which had been submitted.

After the Council had postponed the consideration of Incitamin for more than ten months, Lehn & Fink, Inc., submitted further information. This consisted of a report that 6 c.c. of Incitamin per kilogram was not fatal to guinea-pigs when injected subcutaneously, and photostatic copies of a number of reports from physicians who had used the preparation. No further information was furnished in regard to the composition.

The reports from physicians are, for the most part, based on single cases of various forms of ulcers. A considerable number of the reports are to the effect that the result was "good" or "very good" or "favorable." Other reports state "improvement" or "promising"; others state that the results were "indefinite," "rather slow," "doubtful," "cannot see any marked change," "not satisfactory," etc. In some of the cases in which improvement was noted, other forms of treatment were also used. In other cases, Incitamin was used after various kinds—in some cases rather drastic kinds—of treatment had been employed and the suspicion arises that the favorable course of the case following the use of Incitamin was due to the cessation of harmful treatment. There is nothing in the case reports to suggest that better results were obtained by the use of Incitamin than can be obtained by the use of ordinary methods, or that equally good results could not be obtained with 0.5 per cent. phenol solution.

The Council found Incitamin unacceptable for New and Nonofficial Remedies because the statements of composition are contradictory; no data are given as to the amount of equine serum and pancreatic extract present; no data of any kind are given that the ingredients (whatever they are) have any action (except perhaps the phenol or chinosol); and so far as the evidence goes, it is an absurd and unscientific mixture.

When the preceding statement was sent to Lehn & Fink, Inc., the firm replied that Incitamin formerly contained "saliva, equine serum and pancreatic extract," but that the formula had been changed to a "standardized preparation of equine saliva." The firm also requested opportunity to submit further evidence. The Council, therefore, postponed publication of its report for more than six months. During this period no further evidence for the usefulness of Incitamin was received: therefore, the Council authorized publication of this report.

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Gary's Vegetable Ointment.—The Sloan and Spencer Medicine Co., Birmingham, Ala., are alleged to have shipped in February, May, July and October, 1923, respectively, a quantity of "Dr. Gray's (Gary's) Vegetable Ointment" from Alabama to Mississippi. The Bureau of Chemistry reported that analysis showed the product to consist of two liquids that would not mix, the lighter being mainly kerosene and the heavier alcohol; both contained turpentine oil, camphor, and menthol. The product was declared misbranded, first, because it was not an ointment, and, second, because ridiculously false and fraudulent therapeutic claims were made for it, the stuff being recommended for practically all the ailments known to the human system. In April, 1924, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 13080; issued May, 1925.*]

The files of the Bureau of Investigation show that "Dr. Gary's Vegetable Ointment" used to be manufactured by "Dr. P. Gary" of Chattanooga, Tenn. Gary, so far as the records show, never was a physician. In 1919, the city of Cleveland, Ohio, prohibited the sale of Gary's Vegetable Ointment, manufactured at that time by the Gary Medicine Company of Chattanooga. The Chattanooga *Times* for Nov. 22, 1919, reported that two of the three partners in the Dr. Gary's Medicine Company of that city had filed suit against "Dr." Presley Gary, praying the appointment of a receiver for the company and an injunction restraining Gary from disposing of any of the property owned by the partnership. Further, the paper reported: "According to the allegations of the bill, Dr. Gary has lately taken to drink and has appropriated much of the alcohol used in the manufacture of his 'Vegetable Ointment' to satisfy his own appetite"; also, according to the same bill, Gary had often promised either to stop drinking or withdraw from the partnership, but had done neither. It was charged, too, that Gary had sold thirty-five hundred bottles of this fraudulent nostrum that should have netted the partnership about $1,750, of which the two complaining partners got only $190.

Sayman's Wonder Herbs.—The T. M. Sayman Products Co., St. Louis, Mo., shipped in January, 1924, to the state of Kansas a quantity of "Dr. Sayman's Wonder Herbs," which the government declared misbranded. Analysis of a sample of the article by the Bureau of Chemistry showed it to consist essentially of a mixture of baking soda, powdered ginger, gentian, rhubarb, licorice, cascara sagrada, buchu, senna, mandrake and buckthorn. The stuff was declared misbranded, first, because it was said to be composed of "all herbs"; as baking soda is not an herb this was a falsehood. It was further declared misbranded because the claim that it would regulate the liver, kidneys, cleanse the blood, aid digestion, cure nervousness, syphilis, female complaints and various other conditions as false and fraudulent. In January, 1925, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 13098; issued May, 1925.*]

Chappelear's Bronchini.—William M. Chappelear & Sons Co., Zanesville, Ohio, are alleged to have shipped in various consignments in November, 1923, and May, June and October, 1924, respectively, a quantity of "Chappelear's Bronchini," which was declared misbranded. When analyzed in the

Bureau of Chemistry it was reported to consist of ammonium chlorid, extracts of plant drugs, flavoring material, including anise and sassafras oils, sugar, alcohol, and water. The stuff was sold as an alleged cure for bronchitis, asthma, croup, influenza, and "throat and lung troubles." The claims were declared false and fraudulent. Furthermore, while the label declared the presence of 40 per cent. alcohol, there was only about 30 per cent. present. In April, 1925, the William M. Chappelear & Sons Co., having admitted the allegations, decrees of condemnation and forfeiture were entered and the court ordered that the product be released to the concern on payment of the cost and execution of a bond of $1,500 conditioned in part that the preparation be relabeled under the supervision of the Department of Agriculture.—[*Notice of Judgment No. 13365; issued August, 1925.*]

S-K Remedy.—The S-K Remedy Co., Oakland, Oregon, are alleged to have shipped to California in September, 1920, a quantity of "S-K Remedy" which was declared misbranded. The Bureau of Chemistry reported that analysis showed the product to be composed essentially of vegetable drugs including aloes and a small quantity of a mydriatic alkaloid, alcohol and water. Some of the claims made for this product were:

> "This new and wonderful Remedy known as S-K Sifkure is the first and only purely vegetable compound ever produced that has stood the test as a remedy for Syphilis. S-K is not an experiment, it has passed through that stage. Fifteen years of constant use on hundreds and hundreds of cases has as yet to produce a single case of syphilis that failed to yield to the S-K treatment."

These vicious claims were naturally declared false and fraudulent, and in January, 1925, judgment of condemnation and forfeiture was entered and the court ordered the product to be destroyed.—[*Notice of Judgment No. 13239; issued June, 1925.*]

Correspondence

"ACHLORHYDRIA PRECEDING PERNICIOUS ANEMIA"

To the Editor:—I have read (THE JOURNAL, November 21, p. 1638) the report of a case of achlorhydria preceding pernicious anemia in which the achlorhydria had existed for fourteen years previous to the development of the anemia. I can report one case of pernicious anemia in which the achlorhydria was present twenty-five years before the appearance of symptoms of pernicious anemia. In this case the pernicious anemia developed and progressed, with clinical signs and symptoms of an organic lesion of the spinal cord, namely, so-called subacute combined sclerosis of the spinal cord, which is present in a large percentage of cases of pernicious anemia. This patient developed pernicious anemia with all its usual signs and symptoms, and the achlorhydria was present twenty-five years before the appearance of the anemia, as shown by analysis of the gastric contents.

In another case, a woman had achlorhydria twenty years previous to the appearance of symptoms of pernicious anemia. I have had under observation a large number of cases in which we have observed achlorhydria eight and ten years previous to the appearance of anemia, and still a larger number in which we have been able to observe achlorhydria for a period of four or five years.

In a paper, entitled "A Clinical Study of Two Hundred and Sixty-Four Cases of Pernicious Anemia with Special Reference to the Involvement of the Central Nervous System" (*Battle Creek Sanit. & Hosp. Bull.*, April, 1923), I called particular attention to the fact that a condition of achlorhydria or an absence of hydrochloric acid and pepsin in the contents of the gastric juice existed for a period of many years previous to the appearance of any signs of anemia.

The evidence gathered from a study of this large group of cases seems conclusive that all cases of pernicious anemia are preceded by a rather lengthy period of achlorhydria, and in some of these cases, as in the case of a man mentioned above, this period may be at least twenty-five years before any signs of anemia appear. Another important fact in connection with the finding of achlorhydria is that most of these persons have badly infected teeth, pyorrhea alveolaris, and also many of them have infected tonsils. The evidence is quite strong that the achlorhydria and the pernicious anemia that follows or is associated with the achlorhydria are both the result of an infection from the mouth, causing an atrophy of the peptic glands of the stomach and later causing a destruction of the blood cells and pathologic changes in the spinal cord and other parts of the body.

W. H. RILEY, M.D., Battle Creek, Mich.

"SPIROCHETAL PULMONARY GANGRENE TREATED WITH ARSPHENAMINS"

To the Editor:—Through an error, the report of my discussion (THE JOURNAL, November 7, p. 1459) on the article on spirochetal pulmonary gangrene by myself and Dr. Berger was not corrected for publication. Because of the mistakes in that report, I will appreciate it if you publish the following:

In these cases, there is usually a pyorrhea, dental caries or some active lesion in the mouth associated with Vincent organisms. In one case at necropsy a molar tooth was found carious, the cavities filled with foul smelling, greenish material containing many spirochetes. These organisms are best stained by the Fontana silver impregnation method. The predominating organisms in early pulmonary gangrene are of the Vincent type.

Before ulceration occurs, there is usually a peribronchial and peribronchiolar consolidation. Then the lung has a moth-eaten appearance. It is mottled with gray-green, foul smelling areas containing Vincent organisms. Later there are small and large cavities. Unlike those of tuberculosis, there are no ridges or bridges present. The Vincent organisms spare nothing, and shreds only of necrotic tissue are left hanging to the walls of the cavities, which are practically hollow spherical. Still later, the lung will often show healed, healing and active grangrenous lesions. An interesting complication in one case was a brain abscess. The abscess had the brown-greenish-grayish appearance of the lung lesion and with it there were associated a number of spirochetes.

BENJAMIN S. KLINE, M.D., Cleveland.

"MEDICAL HISTORICAL PERSPECTIVE"

To the Editor:—I suspect that more than one teacher of medical students has been somewhat disconcerted after reading the editorial comment on medical historical perspective in THE JOURNAL (November 21, p. 1645). The item details the replies of thirty junior and senior students to an inquiry regarding "the names of five persons who, in their opinion, might be considered as having made the greatest contributions to medical science." The editorial writer, after listing the students' answers, comments: "How many had a clear conception of what constitute contributions to the progress of medical sciences?"

Let us admit frankly at the outset that "the mark of the cultured man in any field is a knowledge of its background and its growth, and of its relation to the rest of the cosmic scheme that we call civilization." In a recently published historical outline, M. G. Seelig (Medicine, Baltimore, Williams and Wilkins Company, 1925) remarked that the opinion of medical educators is unanimous regarding both the practical and the cultural value of the study of the history of medicine. However, the author adds: "Many important considerations militate against the establishment of such a discipline within the formal medical curriculum. Other influences check the initiative of the medical undergraduate who has at least a fleeting independent impulse to acquaint himself with the medical past; for one thing, he shies at the various authoritative books devoted to the history of medicine, frightened by their bulk as contrasted with the small amount of free time at his disposal."

Nor is this the sole limitation to the medical students' proficiency in the history of science. Driven at a frightful pace through the intricate mazes of almost innumerable facts, old and new, he scarcely finds time to catch his breath long enough to marshal his thoughts into orderly sequence. Add to this the multiplicity of details of technic that must likewise be mastered, and the probable place of the history of medicine in the ensemble of a senior, not to say junior, student's studies can be imagined.

After all, enthusiasm for the historical aspects of science grows with maturity, with opportunity for reflection, with a ready familiarity that develops perspective. Are we expecting too much erudition and expertness at a time when the elements of medicine are first being acquired? Culture involves an attitude of mind and a mode of personal reaction far more than it implies the ability to distinguish succinctly the masters of medicine.

Lafayette B. Mendel, New Haven, Conn.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

HEALTHFUL VENTILATION

To the Editor:—I am glad to read your editorial "Air Currents in Ventilation." I note that you consider "badness" of air due to chemical change or poisonous organic respiratory products, both as negligible and obsolete factors. *From your article, I am unable to tell whether you lay* stress on a supply of fresh air from outside for your air currents or whether agitation of a given volume of air would fulfil the conditions indefinitely. If the latter, ventilation would be reduced to a liberal supply of electric fans. If the former, do modern experiments require anything like the amount of fresh air that we formerly supposed necessary? Past views of this subject have required a certain number of cubic feet of new air per person per hour in schoolhouses.

Oliver H. Howe, M.D., Cohasset, Mass.

Answer.—In all ventilation problems a distinction should be made between places like private houses, where a few people gather, and public places, such as theaters. In the former, air leakage is so great that it is practically impossible to detect the decrease of oxygen or increase of carbon dioxid due to the respiration of the occupants. The humidity never gets high, and air may be recirculated without danger. Of course, the taking of cold air from outside into the home in cold weather is throwing away coal. Fans would help house comfort, particularly if so arranged as to force out the hot layer next the ceiling and mix it with the cooler air near the floor.

In places where many people gather it is sometimes possible to detect a difference in air gases as compared with outside air, but even in such cases the differences are small and not of physiologic importance. However, in the presence of many people the temperature and humidity of the air become high, and either new air should be freely admitted or else the air of the room should be reconditioned and recirculated. Fans are a help in a crowded room, but may not be sufficient to give comfort. Comfort depends on the ability of the body to lose heat as fast as it is produced. We cannot do that when the surrounding air is too warm and humid.

The usual figures of fresh air requirement are possibly too high. "Keep down the temperature" should be the motto in every school room. Air motion should be sought by fans or other devices, and enough outside air admitted so that comfort is maintained.

A popular article on some of these problems will appear in the January number of *Hygeia* under the title, "How to Put Humidity in Your Home." The spray column humidifier and cooler there described would solve the problem of good air in most school rooms.

It should perhaps be added that air washing may actually diminish the quantity of water in air. If air of high humidity and high temperature is brought in contact with a fine spray of cold water, the air comes out cool and saturated with water vapor. But the total moisture in the air at the lower temperature may be less than that present before it entered the washer. Such air, as it is warmed up in breathing, takes on more water, keeps down body temperature and contributes to comfort.

NEPHRITIN

To the Editor:—May I not acknowledge through The Journal the receipt from Reed and Carnrick of their booklet entitled "The Reserve Wealth of the Kidneys"? It has a nice cover and is well gotten up. It has nice pictures. In it are recorded some known truths about the kidneys and much that may be questioned. Some trite sayings are quoted, such as "The kidney expects every tube to do its duty," and "Don't cross bridges until you come to them."

Then the doctors are joshed: "Some patients first make sure that they have given all advertised remedies a fair trial, then adopt the advice of a neighbor who was 'cured of the same complaint' by a chiropractor, finally appealing to a regular practitioner as a last resort."

Further on, the pamphlet speaks about "setting up a vicious circle," and "when the kidneys go on strike the employees of the Internal Secretion Department walk out in a body," and "should the executive import a slave-driver to lash the loyal tubes on to and beyond their endurance?"

Again: "What glandular therapy does for myxedema, Nephritin will do for Nephritis." Right after this statement are a lot of claims, which I pass by with a question: "Nephritin uses its potency to control and *direct* the natural function of the kidneys." "We can, however, by the use of Nephritin, make every healthy cell do its full duty."

May I ask that you look over the inclosed "booklet" and let your readers have a little light on the subject? Known truth in the matter would be applicable to a purpose.

Victor S. Messinger, M.D., Easton, Pa.

Answer.—The present claims for Nephritin (Reed and Carnrick) appear to be substantially the same as those advanced when the Council declared this preparation, along with other products of this company, inadmissible to New and Nonofficial Remedies ("Reed and Carnrick's Methods," The Journal, Oct. 5, 1907, p. 1198). A summary of the Council's findings on Nephritin was later published in answer to a query (The Journal, April 21, 1923, p. 1167). The Council rejected Nephritin because of the grossly exaggerated, unwarranted and misleading claims made for it by the manufacturers, inviting them at any time to present more and fuller evidence to substantiate the claims. This they have never done, though they continue to circularize the profession with booklets such as the one here mentioned.

DEVICES TO AID HEARING

To the Editor:—I have a patient who has suffered some fifteen years with defective hearing following a double mastoid infection. He requested me to write you for advice as to the best form of apparatus to buy to help his hearing. He has used a Morley and one or two others without much help. He wanted to know about the apparatus the Dictograph people put out or any other that you may be familiar with and can recommend.

J. S. Alford, M.D., Crested Butte, Colo.

Answer.—Small apparatus for insertion in the external auditory canal do not as a rule improve the hearing. Many persons do not wish to carry with them a hearing tube, which, although it is of great assistance, is rather cumbersome and unsightly. The aids to hearing that have given the greatest satisfaction are those which are activated by the electric current. A number of these are on the market, but most of them have the objection that it is necessary to carry a battery on one's person and also a receiver and ear attachment. Most of the electrical apparatus have a good many adventitious noises and are sometimes confusing. In cases of nerve deafness, these appliances are not of much service; but in the one mentioned, in which there has been mastoid involvement and it is the conduction apparatus that is mostly affected, these appliances usually give considerable assistance. During the last few years, besides batteries, several appliances have been evolved that utilize vacuum tube oscillators (the same sort of tubes that are used in radio outfits) for amplifying the sound. There is one called the Vactuphone which is said to give great satisfaction. The Western Electric Company of New York also is perfecting an apparatus of which the ear piece is small or practically invisible, and in which the audion bulb is also used for intensifying the sound. The last two mentioned devices are rather expensive, and it is better to test them out thoroughly on the patient before purchasing. In most of the appliances all the tones are amplified alike, whereas the most desirable form of apparatus which could be had is that in which those particular tones to which the patient is hard of hearing are intensified to the greatest degree.

SMALLPOX VACCINATION

To the Editor—We are having a few smallpox cases here, and I should like to ask some questions that I find unmentioned in my textbooks. Please reply in The Journal 1 After an attack of smallpox (less than six months before), would a vaccination "take"? This patient had an eruptive disease, either chickenpox or variola, but about five or six months later was successfully vaccinated. He had never before been vaccinated. 2. Does variola in a pregnant mother confer any immunity on the fetus? Does it confer any immunity at birth only? 3. If glycerinated vaccine 'dies," when exposed to a temperature much above 40 to 45 F., how is it that "ivory points" of past years, before the glycerin lymph was intro duced (which were never kept in the icebox as the glycerin lymph is directed to be done), were able to inoculate patients? 4. In the case of *two brothers, both healthy, two tubes of vaccine from the same lot and* just off the ice were used; one got a take the first time, yet the other failed to and has twice since What is the cause? Is the second brother immune? Please omit my name

M D, Missouri

Answer.—1. It is not reasonable to expect that a vaccination should take six months after an attack of smallpox, and it is quite certain that the disease the patient had was not smallpox.

2. If a woman suffers from smallpox during pregnancy, it is possible that some immunity may be transferred to the fetus by the passage of antibodies through the placenta. It is also possible that there may occur antibodies in the mother's milk and that the nursling may become passively immunized from this milk. In either case the immunity thus conferred, being passive, will be of comparatively short duration. The possibility should not be overlooked that the fetus may survive an intra-uterine smallpox, which would leave a much more permanent and active immunity

3 Generally speaking, dried biologic products such as vaccine maintain their potency longer than in liquids.

4 It would be a mistake to assume that the brother in whom the vaccination failed is immune to smallpox He should be vaccinated again

DIHYDROXYACETONE

To the Editor.—A newspaper clipping states that dioxyacetone, a new diabetes remedy to reduce sugar, may be taken by mouth instead of by injection One of my patients asks me to find out about it.

J. A. H, New York.

Answer.—Dioxyacetone (better called dihydroxyacetone) was reported on in the *Canadian Medical Association Journal*, April and May, 1925, by I. M. Rabinowitch.

According to Rabinowitch, the acidosis of diabetes was overcome by the administration of dihydroxyacetone

Following is an abstract from Dr. Rabinowitch's first paper:

> Dihydroxyacetone is a ketotriose, unstable in alkaline mediums, readily oxidized, and nontoxic in dosage of 50 to 100 gm by the mouth Its administration is followed by lowering of blood sugar, and it appears to have some influence on the excretion of glucose In one case of diabetes it was found to replace small amounts of insulin, at least temporarily

SMELLS OF THE HUMAN BODY

To the Editor:—Could you furnish me with some references to the subject of smells of the human body? Please omit my name

M D, Philadelphia

Answer.—Following are references to published articles on this subject:

Thomayer, J.: Diagnostic Importance of Smelling, *Cas lek cesk* **62:** 669 (June 23) 1923

Niedermeyer, A.: Diagnosis by Smelling, *Deutsch. med Wchnschr.* **49:** 387 (March 23) 1923

Sutton, R. L.: Bromidrosiphobia, The Journal, May 3, 1919, p 1267

Mandl, F: Importance of Odors in Clinical Diagnosis, *Deutsch med Wchnschr.* **48:** 1280 (Sept 22) 1922

De Blasio, A.. Odors of the Human Body, *Riforma med* **36:** 652 (July 17) 1920

Clark, L P: Odor of the Peculiars, *Med & Surg* **1:** 1091 (Dec.) 1917.

ADMINISTRATION OF DIPHTHERIA ANTITOXIN

To the Editor:—Where is the best location to give 1 c c doses of diphtheria toxin antitoxin to school children 6 to 7 years of age? Should these doses be given subcutaneously or intramuscularly?

F L Salisbury, M.D, Cleveland

Answer:—It is customary to give the injections subcutaneously in the outer side of the arm. It probably makes little difference whether the injection is made subcutaneously or intramuscularly.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

Alabama Montgomery, Jan. 12. Chairman, Dr. S. W. Welch, Montgomery.

Arizona. Phoenix, Jan. 5 6. Sec, Dr. W. O. Sweek, 404 Heard Bldg, Phoenix.

Colorado: Denver, Jan. 5. Sec, Dr. David A. Strickler, 612 Empire Bldg, Denver.

District of Columbia: Jan. 12. Sec, Dr. Edgar P. Copeland, Apt. 104, Stoneleigh Court, Washington, D. C.

Hawaii: Honolulu, Jan 11. Sec, Dr. G C. Milnor, 401 So. Beretania St, Honolulu.

Illinois. Chicago, Jan. 19 21. Supt of Reg., Mr. V. C. Michels, Springfield, Ill

Indiana: Indianapolis, Jan 12 Sec., Dr. W. T. Gott, 421 State House, Indianapolis.

Minnesota Minneapolis, Jan 5 7. Sec, Dr. Thomas S. McRavitt, 734 Lowry Bldg, St Paul.

New York Albany, Buffalo, New York, Syracuse, Jan. 25-28. Chief, Mr Herbert J Hamilton, Department of Education, Albany.

North Dakota· Grand Forks, Jan. 5. Sec., Dr. George M. Williamson, Grand Forks

Oregon Portland, Jan 5 7. Sec, Dr. N. C. Coe, 1208 Stevens Bldg, Portland

Pennsylvania· Philadelphia, Jan. 26 30 Act. Sec., Mr. C. D. Koch, Harrisburg

Rhode Island· Providence, Jan. 7. Sec., Dr. Byron U. Richards, State House, Providence.

South Dakota: Pierre, Jan 19. Dir. Med. Licensure, Dr. H. R. Kenaston, Bonesteel, S D.

Utah Salt Lake City, Jan. 5. Director of Reg, Mr. J. T. Hammond, 412 State Capitol Bldg, Salt Lake City.

Washington· Olympia, Jan. 12. Sec, Mr. William Melville, 15 Insurance Bldg, Olympia.

West Virginia. Charleston, Jan. 19 Sec., Dr. W. T. Henshaw, State Health Department, Charleston.

Wisconsin. Madison, Jan. 12-14. Sec, Dr. Robert E. Flynn, 315 State Bank Bldg, La Crosse.

Wisconsin: Milwaukee, *Basic Sciences*, Dec. 18 19. Sec., M. F. Guyer, Madison

Michigan June Examination

Dr Guy L Connor, secretary of the Michigan Board of Registration in Medicine, reports the written examination held at Ann Arbor, June 10-11, 1925. The examination covered 14 subjects and included 100 questions. An average of 75 per cent. was required to pass. One hundred and seventy-five candidates were examined, all of whom passed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
Northwestern University Medical School	(1925) (1925)*	84, 85 84
Rush Medical College	(1925)*	86
The General Medical College	(1924)	83
University of Illinois.	(1925)	85
Boston University School of Medicine	(1924)	86
Harvard University	(1922) (1924)	85 85
Tufts College Medical School	(1923) (1924)	85 83, 85
University of Michigan Medical School	(1924) (1925)	85 80, 81, 81, 81, 81, 82, 82, 82, 82, 82, 82, 82, 82, 82, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 86, 86, 86, 86, 86, 86, 86, 86, 86, 86, 86, 86, 86, 86, 86, 86, 86, 86, 86, 86, 86, 87, 87, 87, 87, 87, 87, 88, 89
University of Virginia Department of Medicine	(1923)	84
McGill University Faculty of Medicine	(1906) (1922) (1923) (1924)	80 85 86 83, 84, 84, 84
University of Toronto Faculty of Medicine	(1919) (1921) (1924)	84 82 82, 83, 84, 85, 86
Western University Faculty of Medicine	(1921) (1922)	83
University of Copenhagen, Denmark.	(1924)†	82

Dr. Connor also reports the written examination held at Detroit, June 15-17, 1925. The examination covered 14 subjects, and included 100 questions. An average of 75 per cent. was required to pass. Ninety-seven candidates took the examination. Eighty-eight, including 18 chiropractors and 1 chiropodist, passed, and 9, including 7 chiropractors, failed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
Northwestern University Medical School	(1925)	84, 84, 88
Detroit College of Medicine and Surgery	(1925)*	80, 80 8, 81, 81, 81, 81, 81.7, 82, 82 9, 83, 83, 83.2, 83 7, 83.7, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84 2, 84 3, 84 4, 84 5, 85, 85, 85, 85, 85, 85, 85, 85, 85.1, 86, 86, 86, 86, 86, 86, 86, 86.2, 86 3, 86 4, 87, 87, 87

St. Louis University School of Medicine	(1925)	80, 85.9
Queen's University Faculty of Medicine	(1924)	84.3
McGill University Faculty of Medicine	(1924)	86
University of Toronto Faculty of Medicine	(1914)	84, (1920) 84.4, (1921) 85.8, (1923) 83, 86.8, (1924) 83, 83, 83.7, 84, 84.1
University of Göttingen, Germany	(1919)†	79
University of Naples, Italy	(1911)†	76
University of Jurjev, Russia	(1918)†	77

FAILED

College	Year Grad.	Per Cent.
University of Palermo, Italy	(1904)† 43, (1920)†	61

* These candidates have finished their medical course, and will receive their M.D. degrees on completion of a year's internship in a hospital.

† Graduation not directly verified by the American Medical Association.

Book Notices

Studies of Mental Defects and Handicaps. By J. E. Wallace Wallin, Ph.D., Professor of Clinical Psychology, Miami University. Paper. Price, 75 cents. Pp. 177. Oxford, Ohio: Miami University, 1925.

In this bulletin are collected a series of studies on mental deficiency that appeared previously in various periodicals. They represent some of the results of seven years' work of the Psycho-Educational Clinic of the St. Louis public school system, while the author was its director. The studies include not only the results of psychometric tests of children reported by the teachers as deficient, but also the outcome of parallel investigations into heredity, physical health, etiologic factors, scaphoid scapulas, behavior characteristics such as truancy and delinquency, and certain speech and language disorders. It is somewhat unfortunate that the tabulations are given throughout in percentage form without correlations. The material entering into these tables is too extensive for detailed discussion here. The author frankly admits the inadequacy of many of his data, even though he is often dogmatic. He is especially emphatic in regard to the interpretation of age levels as indicators of feeblemindedness. In discussing etiology and the relations with pathologic conditions, he has relied on the reports of others, including medical inspectors of the schools. It is not easy, as the author recognizes, to evaluate many of these data; especially is this true for one who is not fully trained in medicine. This is well shown in the chapter on scaphoid scapulas; the criticisms by the author on the faulty findings of the physicians in such a simple and objective investigation will naturally arouse doubts as to the adequacy of other findings that are used as a basis for conclusions. For example, "infantile paralysis" is accepted as the adequate "sole cause" of mental deficiency in two cases. This use of the term suggests a lay rather than a well informed medical source, but it is accepted without comment. Though the statement is made that medical examinations were performed by school medical inspectors, there is nothing in the text to indicate how they were made or to differentiate what was reported by physicians from that by friends, nurses or others.

The discussion of the value of psychometric tests in diagnosing feeblemindedness, by which is meant social and economic dependence or incompetence due to congenital or early acquired intellectual deficiency, is a good illustration of the pragmatic, social attitude adopted by the author. He points out that many persons testing even so low as 9 years in mental age are quite capable of self support and full social responsibility. This opinion is supported by figures from the army examinations and by the findings from the admittedly inadequate follow-up studies that have been possible since the work with school children in St. Louis was undertaken. He makes no allowance for the fact that in the army the tests were applied to adults. He expresses further the opinion that "the degree of intelligence deficiency necessary to constitute feeblemindedness must be so serious that the individual on attaining his maturity will not exceed an intelligence level of 9 years." The full meaning of this assertion becomes clear from the statement in another chapter that "we cannot adequately diagnose a child's educational or social capacity or prognose his industrial capability by intelligence tests alone." The life history and behavior characteristics must be taken into account: unfortunately, such traits are insusceptible of exact measurement. The conclusions reached, therefore, are in accord with those of the psychiatrist, who regards the mental age as only one factor in a complex picture.

The Missouri law dealing with backward, feebleminded and otherwise handicapped children by establishing special and ungraded classes in the schools is discussed in detail. This will prove of value to all interested in the development of state plans for the care of mental defectives. The results reported from the operation of the law also suggest more rational and optimistic views of this problem than have been usually prevalent. Throughout, the author compares his findings with those of others and quotes figures extensively from the literature. Divergences of result are stressed as indications for real scientific study and for the abandonment of bias for fact. The style is self-assertive, and the writer often appears to be unnecessarily contentious. The general trend of the discussions, however, is healthy and pragmatic, and the tabulations will be found valuable for reference and comparison.

Rats and How to Destroy Them. Dealing with Rats in a House, Shop, Warehouse, Outbuilding, Yard, Stable, Cow-House, Fowl-house, Pig-sty, Garden, Greenhouse, or Vinery; by a River, Stream or Ornamental Water; on a Ship, Shooting Estate, or Farm; and in Sewers. By Mark Hovell, F.R.C.S., with introduction by S. L. Bensusan. Cloth. Price, $5. Pp. 465, with 51 illustrations. New York: William Wood & Co., 1924.

Mr. Hovell does not underestimate the acumen of rats; and he surely does not overestimate the intelligence of the men who catch them. His work is reminiscent of Izaac Walton, Dan Beard and the Pied Piper of Hamelin rolled into one. For forty years or more, the author has been taking notes, making experiments, inventing traps and covers for traps, devising signal systems, and analyzing poisons, mixing his own and testing their worth. Traps, runs and shelters for the traps have been made with his own hands, tried on his own property, and found worthy of public acceptance and use. "We must destroy these worst of all vermin," says the introduction, "for if we fail to do so, they will destroy us. Not only will they add very many million pounds a year to our national losses, but they will thrive so upon our negligence that Nature, the divinity that shapes our rough-hewn ends, will become alarmed at their numbers and send the plague among them. This plague is communicable to man in bubonic or pneumonic form, as most people know."

Modern Operative Surgery. Edited by H. W. Carson, F.R.C.S., Senior Surgeon, Prince of Wales's General Hospital. In two volumes. Cloth. Price, $20 per set. Pp 1568, with 741 illustrations. New York: William Wood & Co., 1925.

In the preface to this work, the editor says: "This is an attempt to present to the profession an authoritative survey of the whole range of modern surgical operations." And: "My aim has been to exclude operations which have lost their usefulness, and among new operations to include those only which have *proved* their value." These two statements virtually take the wind out of the sails of any one attempting to review the work; first, because it would mean to assail the wisdom and attainments of the editor as one not competent to decide what to exclude and what not; and, secondly, because the contributors have been selected with great care; they are men of acknowledged ability, and their word has been accepted as law, although no more binding than that of other equally well equipped men. Only controversial argument would result from any attempt to make a critical review—especially as the reviewer, in turn, presents only his own views. Among the contributors and their subjects are: Blomfield, anesthetics; Gauvain, surgical tuberculosis; Elmslie, general orthopedics; Handley, malignant disease and breast; Turner, liver and other structures; Walton, intestinal stasis; Verrall, joints; Hey-Groves fractures; Platt, nerves; Drummond, rectum; Rawling, skull and brain; Choyce, the tongue; Gillies, plastic surgery; Thomson-Walker, kidney and ureter, bladder, prostate and urethra. Only English surgeons have made contributions, and each of them has been exceedingly conservative in presenting his views. Some subjects apparently receive scant notice; some are omitted, but, remembering what the editor says in his preface, these sins of omission and commission can always be charged to the fact that whatever is not mentioned either has been discarded by the best surgeons or has not yet been accepted as really worth while. No attempt is made to present any subject in essay style, but merely in the form of present day actual knowledge. Speculation is not indulged in anywhere. Each topic is discussed systematically with reference to preoperative preparation and treatment, choice of anesthetic, asepsis and antisepsis, and general principles of technic and after-treatment. Results from many sources are presented, but, in keeping with the underlying idea of the work, no attempt is made to make any extensive references to literature. The writers apparently limit themselves to the presentation of what they regard as known and accepted facts, and quote only such references as bear on these facts. With that style one can have no quarrel, especially as this work is not heralded as a textbook. It is a record of the personal views and convictions of well known English surgeons, and as such will no doubt prove of great interest to all surgeons. The text is well written; it is clear and—with emphasis—concise. The illustrations are all original, a distinct novelty in books, although not without a precedent, an American surgeon who recently finished an extensive work on operative surgery having used only original drawings. The illustrations really illustrate, artistic merit often being sacrificed to clarity of depiction of an operation. On the whole, the work possesses much merit and can be read with great profit and pleasure.

Pathologische Physiologie des Chirurgen. (Experimentelle Chirurgie.) Ein Lehrbuch für Studierende und Aerzte. Von Prof. Dr. Franz Rost, Leitender Arzt der chirurgischen Abteilung des stadtischen Krankenhauses Mannheim. Third edition. Paper. Price, 27 marks. Pp. 626. Leipsic: F. C. W. Vogel, 1925.

Perhaps the greatest single advance in the surgery of the last decade is represented in the domination of surgical thought and procedure by the physiologist. Such fields of surgery as the thyroid, spleen, liver, gall tracts and stomach are noteworthy examples of this advance. This volume, dealing with pathologic physiology, includes in its scope every region of the body accessible to the surgeon. Its aim is to correlate the physiology of malfunction with symptomatology, and to establish a logical basis for corrective surgery; as the author puts it, "to provide a link between the student and the physician in the interpretation of diseases of the human body." The modern surgeon must be more than a mere mechanic. He must know and recognize living pathologic change. He must know, for instance, the significance of the exudate in peritonitis, or the effect of the various operative procedures advocated for ulcer on the motor mechanism of the stomach. He must know and recognize the various signs of malfunction as they contraindicate surgery. The development of the functional test in surgical diseases may be cited as example. The volume includes chapters on the digestive tract, kidneys, thyroid, chest, central and peripheral nervous systems, and the extremities. In this edition are valuable contributions on lymphatics, arthritis, arteriovenous aneurysm, and bone and joint tuberculosis. The work may be said to stand foremost among monographs on this phase of surgery.

The Animal as a Converter of Matter and Energy. A Study of the *Rôle of Live Stock in Food Production. By Henry Prentiss Armsby*, Director of the Institute of Animal Nutrition, Pennsylvania State College, and C. Robert Moulton, Professor of Agricultural Chemistry, University of Missouri. *Cloth. Price, $3. Pp. 236.* New York: The Chemical Catalog Company, Inc., 1925.

The new monograph of the American Chemical Society series coming from the late authority Dr. H. P. Armsby and from an authority of wider range, Dr. C. Robert Moulton, will no doubt be welcomed by those associated with various phases of the production of meat products. The main title is no doubt rather misleading, in that the book hardly attempts to present fundamental facts and problems but treats the subject more from the standpoint of technical information, as more accurately suggested by the subtitle. The book is divided into two parts. The first part, on the chemical processes of conversion, covers in elementary fashion the composition of feeding stuffs, the composition of the finished products resulting from stock raising and a brief discussion of digestion, absorption and metabolism. This part of the book is valuable from the standpoint of the tabular statements of composition there compiled, but does not give the most accurate account of such topics as maintenance of neutrality. The second part is on efficiency of conversion and gives in some detail the methods of investigation used and the results obtained. The material presented should prove of considerable value to scientific workers associated with stock raising and milk production. The book is well indexed and contains many valuable bibliographic footnote references.

Synopsis of Midwifery and Gynaecology. By Aleck W. Bourne, B A., M.B., B.Ch., Senior Obstetric Surgeon, Queen Charlotte's Hospital, London. Third edition. Cloth. Price, $4.50. Pp. 434, with 171 illustrations. *New York: William Wood & Co., 1925.*

This is an excellent synopsis of obstetrics and gynecology. The first part, on obstetrics, is written in outline form. It is fairly complete and authoritative, giving the English obstetrician's point of view. The value of this section has been greatly enhanced over previous editions by the use of many well made illustrations. The second section is an outline of gynecology, very thorough, even including the relatively recent pathologic entity called endometrioma. The pathology of the various conditions is well described. In general, the book is well adapted for reviewing the subject quickly.

Miscellany

COLONIZATION OF ARRESTED CASES OF PULMONARY TUBERCULOSIS ON FOREST RESERVE LANDS

Our nation, exclusive of Alaska and our overseas dependencies, embraces 3,000,000 square miles of land surface. Twenty per cent. of this would mean 600,000 square miles of forest area. Proper management and working of our forest lands would increase fourfold the present output of timber, a supply sufficient for the needs of our land for all time. The deep ravines, securely damned up, could better distribute and control the water output, giving us the use of it when most needed in the summer time. The power so generated would be almost incalculable. It is sufficient to state that at present not 1 per cent. of our flood water is utilized; the rest of it is lost, and all too often works ruin during its mad rush to the sea. Were all of our available water supply put to use we could multiply ten times over the power at present generated in the United States, and we would be using an endless chain of power, and not a perishable one as is the case today. The coal will some day all be gone; the water power we shall have forever. Furthermore, as an added advantage, at least 1 ton of food fish per acre could be produced every year from these artificial lakes, a sum total that would be an immense addition to our food supply. Turning again to the land surface, every thousand acres of forest land could be made to yield each year 200 deer as an addition to our present meat supply. If the entire forest area was so utilized, more than 70,000,000 deer could be provided annually. Elk or other game might be substituted, but in any case it would be an addition to our present meat total, for it would not be taking up much of the area now used for pasture purposes. The income that can be derived from the very waste heaps of our present lumbering methods would yearly run far into the millions. Today these heaps of slashings and scrap stuff are even more than waste—they are a positive source of danger to the standing timber. Left lying dry on the ground, the spark of the carelessly thrown match all too often ignites them and a blackened hillside tells the tale of loss from fire. From them could be obtained immense quantities of alcohol, oxalic acid, acetic acid and creosote. From the waste heaps of the pine lumber camps in the South, many millions of dollars' worth of turpentine could be produced annually. Our tannic acid output could be nearly doubled from the chestnut lumbering refuse, and our present pulp-wood supply could be multiplied several times over from the other lumber waste. At present the United States government and the various state governments own 227,117 square miles of forest reserve land. Let us begin at once really to work these holdings so as to get all out of them we properly can, and in almost no time they will be not only self-supporting but revenue producers as well. The present force, however, at work on them is but a very small fraction of the quota required to do the work completely. Here we could find places for every arrested case of tuberculosis in the United States. All over these forest holdings should be established little colonies and settlements where we could place our tuberculous patients strong enough for work, and here they might begin anew the battle of life. No longer dependent, they would be once more men among men, again adding their quota to the productive forces of the nation. More than this, they would not have to feel that in thus finding work they were taking work from others. Far from it; they would be adding to the actual working force of the country and could stand independent and foursquare with the world. A good many of our men would be able also to do patrol work, looking out for forest fires from watch towers and other points; others could be engaged in surveying and research work, and as they gained strength could help in the making and looking after roads and trails and fire lines and thinning and harvesting timber. Also, they could find employment in power plants and as game and fish wardens, guides for camping parties, work in insect control, collecting tree seedlings, and building and repairing telephone lines. Willow plantation work and the making of willow-ware articles could, much of it, be done by women as well as men. Then there is a big field in the making of wood novelties along with the manufacture of baskets and various bark articles. This plan for the combined conservation of man and timber may seem visionary and far away today, but it is a very feasible and very practicable one, and some day it surely will be done.—Rothrock, A. M.: *U. S. Veterans' Bureau M. Bull.* **1**:32 (Dec.) 1925.

CONFERENCES ON HEROIC REMEDIES

Most of the organized governments of the world were represented at the Second International Conference on the Unification of Formulas of Heroic Remedies held in Brussels, Belgium, September 21-29. The United States government and the Revision Committee of the U. S. Pharmacopeia were represented by A. G. DuMez, who reports, in part:

> The session was devoted to the adoption of rules governing the work of the conference and to the appointment of committees to consider and report on Topics 1, 2, 4, 5, 6 and 9 of the program, an outline of which follows:
>
> Topic 1. Revision of the decisions of the first conference.
> Topic 2. Unification of the formulas of other heroic remedies.
> Topic 3. Unification of arsenic and bismuth compounds.
> Topic 4. Unification of chemical methods of assay of certain medicaments.
> Topic 5. Unification of biologic methods of assay.
> Topic 6. Unification of maximum doses.
> Topic 7. Examination of the proposition to adopt a characteristic container for remedies intended for external use.
> Topic 8. Regulation of international commerce in narcotics.
> Topic 9. Examination of the project to create a permanent international secretariat of pharmacopeias.
>
> It was unanimously agreed that Topic 8 should be stricken from the program, as the subject was already being dealt with by a special committee of the League of Nations.
>
> Subsequent plenary sessions were held, September 22, 23, 25, 26 and 29. At these sessions, there were considered, in addition to Topics 3, 7 and 9 and the reports of the committees, several special propositions, namely: (1) A proposition to adopt a chemical method of standardization of the arsenicals, submitted by Dr. De Myttenaere of Belgium. (2) A proposition to adopt extracts of unit strength to be used in the preparation of other galenicals, submitted by the Swiss delegation. (3) A proposition to study the methods of dealkalizing glass containers intended for eye lotions and hypodermic solutions, submitted by the Swiss delegation. (4) A proposition to compile alphabetically in a small volume all the decisions on drugs and medicaments made by the conference, submitted by the Swiss delegation.

Medicolegal

Use and Weight of Examining Physician's Report

(Hart v. Industrial Accident Commission et al. (Calif.), 235 Pac. R. 748)

The District Court of Appeal of California, Third District, in affirming an award of the commission which denied compensation to an employee who met with an accident, says that an examining physician in the case wrote a letter describing the accident, what his examination revealed, and that his conclusion was that the patient had a right indirect advanced inguinal hernia, which was an old hernia as it was too large to have developed in five days, and tenderness was lacking. It was contended that a rehearing should be granted on account of the commission having received and acted on hearsay testimony; namely, the report of the examining physician. The existence of legislative sanction for the admission of such testimony was recognized, but the constitutionality thereof was questioned. The court does not agree with the contention, nor deem the law unconstitutional.

As to whether reports of examining physicians are reliable and whether credence may be given thereto and action based thereon are not matters for this court to determine. The legislature has amended the law so as to admit the receipt of such testimony by the commission, and the weight and credibility to be given thereto are for the commission, and not for the court.

A considerable portion of the petitioner's brief was given to a consideration of the causes of hernia, its origin, its symptoms and results, based on quotations from de Quervain on Clinical Diagnosis and Buckman's Operative Surgery. These writers differed somewhat from the conclusions reached by the examining physician, but this court had no means of determining whether these writers were more accurate in their statements, or better informed, or more likely to give correct information, than the examining physician. The argument of counsel reduced to a simple statement was the placing of hearsay testimony against hearsay testimony, the writing found in a book against the writing constituting the report of an examining physician. The court thinks the commission was justified in acting on the report of the examining physician, rather than on theories or suppositions or statements found in books, because the writer of the report undoubtedly knew at the time of making it that he was subject to the call of the commission and could be specifically and thoroughly interrogated as to any matters or statements contained in it. In any event, these were matters for the commission, and were within the exclusive jurisdiction of the commission.

Chiropractor Not a "Legally Qualified Physician"

(Isaacson v. Wisconsin Casualty Association (Wis.), 203 N. W. R. 918)

The Supreme Court of Wisconsin says that during a portion of the time for which the plaintiff sought to recover a sick benefit under an accident insurance policy he was attended by a chiropractor. The policy required, as a condition of the payment of the sick benefit, that the insured should be attended by "a legally qualified physician," and the defendant argued that, since the Wisconsin statute provides that "reputable practitioners of chiropractic may practice their profession in this state, if they do not hold themselves out as registered or licensed, and conspicuously display in the places where they practice a sign containing in large and legible type: 'Not registered or licensed in Wisconsin,'" they are not to be classed as regularly qualified physicians.

It is a well known fact that chiropractors specialize in certain classes of diseases; that ordinarily they do not administer medicine or treat certain classes of diseases very common to humanity. It is not here intended to determine whether or not specialists who are regularly licensed come or do not come within the terms "legally qualified physician," as used in the policy. But it seems quite clear that, in using the term "legally qualified physician," the insured as well as the insurer meant a physician who was qualified and licensed to practice, and that the term did not include a specialist in body manipulations only, such as a chiropractor. Many forms of sickness attack persons that chiropractors do not pretend to treat at all. It was undoubtedly the idea of the insurer, in choosing the term "legally qualified physician," to include only persons who could aid and treat all classes of ailments to which the insured might be subject, and that where, as here, there was a case of rheumatism and pleurisy, the services of a regularly qualified physician, one who might and would prescribe and administer medicine as well as perhaps employ body manipulations, was intended

As stated in briefs by both counsel, the term "physician" is one of very wide significance and colloquially speaking includes the term "surgeon" and many specialists within the field of medicine It is the broadest term our language contains applicable to one who practices medicine, including both medicine and surgery in its original meaning This court therefore reaches the conclusion that the trial court erred in holding that a chiropractor was a "legally qualified physician" within the meaning of the policy, and the judgment rendered will be modified by deducting the amount allowed the plaintiff for disability during the time that he was not treated by a "legally qualified physician"

Employer Liable for Roentgen-Ray Burn in Examination

(Lincoln Park Coal & Brick Co v Industrial Commission et al (Ill), 148 N E. R 79)

The Supreme Court of Illinois says that an employee was injured in the course of his employment in February, 1921 He was voluntarily paid $533 07 compensation by his employer. He returned to work, but insisted that he had only partly recovered, and that he was entitled to further compensation, which was not agreed to by his employer, and he filed an application for the adjustment of his claim The employer demanded that the employee be examined by a physician selected by it On March 10, 1922, he submitted to an examination in the course of which roentgenograms were made by the physician On March 12 an agreement was made for a settlement on payment of $200, which was approved by the industrial commission About three days later the employee discovered that he had been burned on the abdomen by the roentgen-ray machine The evidence disclosed that the burn caused a rather serious condition On April 24 he filed a petition for review under the workmen's compensation act of Illinois The industrial commission made an award, ordering the employer to pay him $12 a week for 230 57 weeks, commencing April 24, 1922, and thereafter a pension for life of $23 33 a month, and $382 75 on account of medical and hospital services The circuit court set aside the award, but the supreme court reverses the judgment of the circuit court and affirms the award of the industrial commission, after deducting $128 40 from the award for medical and hospital services, which it was admitted should have been $254 35, instead of $382 75

The employee contended that, as he was required by the employer to undergo the examination by the physician who was its agent in making the examination, the injury inflicted by the examination was the proximate result of the original injury The employer, on the other hand, contended that the proceeding authorized by paragraph (h) of Section 19 of the compensation act, under which the employee filed his petition for further compensation, was for compensation for a recurrence or increase of disability from the original injury, and did not authorize an award of compensation for injury from any intervening cause; that the burn, although resulting from the examination which the law authorized the employer to require the employee to submit to, was in no sense a recurrence or increase of the disability for which compensation was authorized and in no way was connected with or related to the injury for which compensation was claimed.

The question was a novel one, and counsel for the employer stated that diligent search had failed to disclose any case which had decided the exact question They contended, however, that the weight of authority is that the employer is not liable, under the workmen's compensation act, for injury resulting from the malpractice of a physician, and that, while that was a different question from the one here involved, there was some analogy between the two questions. But this court believes that it was never contemplated that the statute should authorize the employer to compel an examination by a physician selected by the employer to determine whether the employee is suffering any incapacity from an injury for which the employer is admittedly liable, and if the physician making the examination, through negligence or lack of skill, inflicts an injury which causes disability, the employer should not be liable under the statute. As the injury for which the employee was seeking compensation in this case would not have occurred except for the examination required to be made by the employer, this court is of the opinion that it was so related to, and connected with, the injury as to authorize an award of compensation In certain cases this and other courts have held that where there was an injury which lowered and weakened the vitality of the employee, and an independent disease was contracted which caused death, it would be attributed to the injury and not to the disease. If those decisions are sound—and this court certainly believes they are—the construction was warranted that the employer was liable to pay compensation in this case.

Damages Allowed for Colds

(St Louis San Francisco Ry Co v McHaffey et al (Ark), 271 S W R 452)

The Supreme Court of Arkansas says that a train on which the plaintiffs were passengers was, by a collision in front of it, delayed from 7 p m. until 3 or 4 o'clock the following morning, and, the engine being detached to assist in removing the debris caused by the collision, the coach in which the plaintiffs were became very cold, the temperature falling to 16 or 18 degrees below zero On account of the exposure during the night, the plaintiffs all contracted severe colds Mrs McHaffey was indisposed for two or three weeks; an elder daughter was confined to her bed, and barely escaped pneumonia, while two children soon recovered. None of the family suffered any permanent injury on account of the exposure, and, aside from the elder daughter, none of them suffered intensely At the conclusion of the testimony in all the cases, the defendant railway company admitted liability and asked that the jury be instructed as to the measure of damages only The elder daughter recovered a judgment for $1,000 damages, Mrs. McHaffey, one for $800; and each of the two children, one for $100. The company appealed, contending that the judgments were excessive, and the supreme court thinks that, under all the circumstances, they were; wherefore it holds that a remittitur must be entered reducing each judgment one half; otherwise the judgments would be reversed and the cause remanded for a new trial.

Society Proceedings

COMING MEETINGS

American Pharmacological Society, Cleveland, Dec. 28-31. Dr. E. D Brown, University of Minnesota, Minneapolis, Minn , Secretary.

American Physiological Society, Cleveland, Dec 29 31. Dr. W. J. Meek, Science Hall, Madison, Wis

American Society for Experimental Pathology, Cleveland, Dec 28 30 Dr. E B Krumbhaar, Philadelphia General Hospital, Philadelphia, Sec'y

American Society of Biological Chemistry, Cleveland, Dec 28 30. Dr D W. Wilson, University of Pennsylvania School of Medicine, Philadelphia, Secretary

Federation of American Societies for Experimental Biology, Cleveland, Dec 29 31 Dr Walter J Meek, Science Hall, Madison, Wis , Sec'y

Isthmian Canal Zone, Medical Association of, Ancon, Jan 19. Dr. David L Robeson, Ancon Hospital, Ancon, Secretary.

Philippine Islands Medical Association, Manila, Dec 16 19 Dr Isabelo Concepcion, College of Medicine and Surgery, Manila, Secretary

Porto Rico, Medical Association of, Coamı, Dec 14 15 Dr. R M. Suarez, Box 314, Santurce, Secretary

Sioux Valley Medical Association, Sioux City, Iowa, Jan. 19 20. Dr. R F. Bellaire, Trimble Block, Sioux City, Secretary

Society of American Bacteriologists, Madison, Wis , Dec 29 31. Dr. James M Sherman, Cornell University, Ithaca, N Y., Secretary.

Southern Surgical Association, Louisville, Ky , Dec 15-17. Dr. Hubert A. Royster, 423 Fayetteville Street, Raleigh, N. C., Secretary.

Western Surgical Association, Wichita, Kan , Dec 18-19. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Minn , Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

1: 1-128 (Oct.) 1925

- *Sudden Death Due to Exacerbation of Latent Syphilitic Myocarditis. A. S. Warthin, Ann Arbor, Mich.—p. 1.
- *Prognosis in Subacute Bacterial Endocarditis. E. Libman, New York.—p. 25.
- *Selection of Patients with Angina Pectoris for Sympathectomy. S. A. Levine and F. C. Newton, Boston.—p. 41.
- *Economic Phases of Cardiac Disease. J. G. Carr, Chicago.—p. 62.
- *Status of Heart in Myxedema. F. A. Willius and Haines, Rochester, Minn.—p. 67.
- *Postural Hypotension; Three Cases. S. Bradbury and C. Eggleston, New York.—p. 73.
- Classification of Cardiac Diagnosis. P. D. White, Boston and M. M. Myers, Des Moines, Iowa.—p. 87.
- *Circulation of Heart Valves. W. J. Kerr and S. R. Mettier, San Francisco.—p. 96.
- Official Method for Lessening Heart Disease. J. D. McLean, Philadelphia.—p. 107.
- New Electrode for Clinical and Experimental Electrocardiography. G. R. Hermann, New Orleans, and F. N. Wilson, Ann Arbor, Mich.—p. 111.

Death Due to Latent Syphilitic Myocarditis.—The eight cases reported by Warthin show that sudden death may occur in latent syphilis as the result of an acute exacerbation of previously mild, latent processes in the heart and aorta. The pathologic character of the active lesions differs from that of the chronic lesions in the more marked edema and the greater polymorphonuclear cell content of the infiltrations. In this respect these acute lesions resemble the perivascular and vascular infiltrations of active syphilis of the umbilical cord in which the cells are predominantly polymorphonuclears and the number of spirochetes enormous. They correspond also to the "critical reaction" described by Brown and Pearce in experimental animal syphilis in which there is a diffuse edema and polymorphonuclear infiltration in the rapidly developing syphilitic lesions followed by a rapid resolution. Similar lesions occur in the earliest stages of the syphilitic process, and in lesions of malignant type before ulceration occurs.

Prognosis in Subacute Bacterial Endocarditis.—Libman reports on a study of over 800 cases of subacute bacterial endocarditis, extending over a period of twenty-five years. He has found that there is a small number of spontaneous, complete recoveries. There is a surprisingly large number of cases that come under observation with the sequelae of a former attack of the disease, either just before or directly after the infectious stage has terminated, or, more commonly, without any clinical recognition of the attack. Mild cases of short or long duration occur. The disease may exist in recurrent form. In the course of healing, the lesions of subacute bacterial endocarditis play a rôle in the development of chronic valvular disease.

Sympathectomy in Angina Pectoris.—A detailed report is made by Levine and Newton concerning seven patients who were selected for sympathectomy. They are all alive from three months to two years following operation. Three were rendered absolutely free from anginal attacks immediately and have remained so. Three continued to have typical anginal attacks after the operation but were nevertheless considerably improved, in that it required a greater effort to bring the attacks on. One was made neither better nor worse. Of these latter four, three have since become practically free from attacks as a result of medical care. An eighth patient died on the day of the operation. It had been decided after careful study that this case was a distinctly unfavorable one to be treated surgically, but because the patient was growing worse and life was becoming unbearable despite a ten weeks' course of medical care, including antisyphilitic treatment, the operation was performed although the operators were fully aware of its dangers. In general it is felt that the operative measures for angina pectoris if carried out on properly selected patients are a distinct addition to therapy.

Economic Phases of Heart Disease.—Carr states that about one half of the patients with chronic heart disease with decompensation are of an age at which the earning capacity should be at its maximum and family responsibilities are likely to be most pressing. These persons are affected with a disease which causes partial disability for years and total disability extending, on the average, over a year and a half. In a single dispensary, one third of the families represented were dependent on charity for their sustenance. Figures have been presented from two institutions which show that the economic loss, private and public, covering only a fraction of the patients with heart disease in one of our large cities, must be estimated in hundreds of thousands of dollars annually.

Heart in Myxedema.—In 162 cases of high grade myxedema studied by Willius and Haines, no case of heart failure and no case of organic cardiovascular disease was found that could be justly attributed to the myxedema. There were numerous electrocardiographic abnormalities which disappeared under thyroid medication. The data presented do not justify the establishment of a cardiac syndrome characteristic of myxedema.

Postural Hypotension.—The one feature of outstanding interest and importance common to the three patients whose histories are given by Bradbury and Eggleston is the extraordinary dependence of the systolic and diastolic blood pressures on the influence of gravity, as exerted through alterations in the positions of the body from the horizontal. The rise of blood pressures in the head down position, and their fall in the foot down or the erect position, occurs almost immediately. The reactions are those which would be expected if the whole peripheral vascular bed were always wide open, inelastic and capable of accommodating the major proportion of the entire blood volume of the body. This is the only definite conclusion to which investigations have led the authors. The cause or causes of this remarkable absence of normal vasomotor control seems to be purely speculative. Efforts to cure these patients, or to control their disorders, have been unavailing. These efforts have included the administration of thyroxin, epinephrin, dried suprarenal substance, mixed glands, strychnin and digitalis, and the enforced consumption of sugar and of water. Paralysis of the sympathetic vasoconstrictor endings seems to be the only adequate explanation of the blood pressure reactions observed in these three cases. It accounts for the absence of vasoconstriction following the injection of epinephrin. And it explains the total absence of the normal vasomotor control by which blood pressure is maintained at a nearly constant level in the face of changes in the position of the body in normal persons.

Circulation of Heart Valves.—Further confirmation of the embolic conception of endocarditis is presented by Kerr and Mettier. They point out that further evidence is needed to prove the identity of rheumatic and subacute bacterial endocarditis, but recent investigations are more than suggestive.

Archives of Dermatology and Syphilology, Chicago

12: 613-766 (Nov.) 1925

- *Etiology of Granuloma Inguinale. L. H. Cornwall and S. M. Peck, New York.—p. 613.
- So-Called Colloid Degeneration of Skin. T. Jager, Wichita, Kan.—p. 629.
- *Sporotrichosis in Man. J. F. Burgess, Montreal.—p. 642.
- *XLIV. Pellagra; Two Cases. W. H. Mook and R. S. Weiss, St. Louis.—p. 649.
- Miliary Lichen Planus; Case. E. R. Maloney, New York.—p. 657.
- *Curative Effect of Bismuth Compounds in Experimental Rabbit Syphilis. G. W. Raiziss and M. Severac, Philadelphia.—p. 661.
- Blood Wassermann Reaction in Experimental Rabbit Syphilis. G. E. Wakerlin and P. H. Carroll, Madison, Wis.—p. 670.
- *Hypercholesterolemia. I. Normal Blood Cholesterol Figures for Man and for Lower Animals. F. D. Weidman and J. W. Sunderman, Philadelphia.—p. 679.
- *Tubercle Bacillus as Etiologic Factor in Lupus Erythematosus. A. B. Cannon and G. G. Ornstein, New York.—p. 691.
- *Flumerin in Ophthalmologic Complications of Syphilis. J. F. Hogan and J. C. Robertson, Baltimore.—p. 700.

*Clinical and Serologic Value of Colloidal Benzoin Reaction. E. D. Osborne, Buffalo.—p. 706.
Clinical Study of Kahn Precipitation Test and Kolmer Complement-Fixation Test. R. L. Kelly, Philadelphia.—p. 720.

Micro-Organism of Granuloma Inguinale.—In three cases of granuloma inguinale studied by Cornwall and Peck, organisms that they believed to be identical were isolated. Lesions resembling clinically and pathologically those observed in humans were reproduced in rabbits by intracutaneous inoculation. An organism apparently identical with the one cultured from human lesions was obtained in cultures from rabbit lesions. Lesions were produced by reinoculation from rabbit to rabbit, and an organism was recovered from the second rabbit that seemed to be identical with that isolated from man. The organism isolated undergoes a characteristic morphologic change in young cultures on Sabouraud's medium. This morphologic change disappears in old cultures, and is not reproduced in subcultures.

Sporotrichosis in Montreal. — A case of sporotrichosis occurring in a patient in Montreal is reported by Burgess. Apparently this case represents a somewhat unusual type of the disease, and probably is best described as a single sporotrichotic gumma. The causative fungus is *Sporotrichum beurmanni*. Of interest was the slow response to potassium iodid, a drug that usually results in a relatively quick involution of these lesions. A six months' course of treatment with large doses of potassium iodid was necessary before complete recovery resulted.

Protein Diet in Pellagra. — Mook and Weiss report two cases of pellagra in which a pure protein diet was given. In one case complete recovery occurred on this diet but in the other it was necessary to add sufficient fat and vitamin together with digestive ferments to satisfy the caloric requirements. A point of interest in this case was the fact that the disease was self-induced. The patient, aged 16, decided to reduce her weight. The regular diet in her family was not well balanced, and the patient, by omitting one meal daily and using a preponderance of carbohydrate and fat, succeeded in reducing her weight but produced a self-induced pellagra.

Curative Effect of Bismuth Compounds in Syphilis.—On the basis of prolonged observations and the method of popliteal node transfer, Raiziss and Severac found that bismuth compounds are powerful enough to cause complete eradication of infection in experimental rabbit syphilis. However, because the low toxicity of arsphenamin derivatives permits the intravenous administration of massive doses, they remain the basic remedies in the treatment of syphilis, bismuth compounds taking the next place.

Normal Blood Cholesterol Curve.—A list is submitted by Weidman and Sunderman indicating the normal range of "whole blood" cholesterol in various animal species, and showing in order which species have the highest values. From this it appears that there is no relation between the dietary habits of animals and blood cholesterol content.

Tubercle Bacillus as Cause of Lupus Erythematosus. — Tuberculosis, both macroscopic and microscopic, was produced by Cannon and Ornstein in guinea-pigs inoculated with biopsy material from five of twenty-three cases of lupus erythematosus. This fact, while not conclusive proof, would point to the tubercle bacillus as the etiologic factor in this disease. The hypersensitiveness to tuberculin, general, local and focal, is suggestive of the tuberculous nature of this disease.

Flumerin in Syphilis of Eye.—Hogan and Robertson discovered accidentally that flumerin is of value therapeutically, the initial dosage in all cases being 3 mg. per kilogram of body weight. The dose was increased according to the amount of salivation and the urinary findings. In most of the cases in which more than 0.2 gm. of the drug was given, there was a gingivitis. This was not severe, however, and usually disappeared in from forty-eight to seventy-two hours. In a few instances, following large doses, the patient complained of tenesmus, and in two or three instances, there was diarrhea, but only in one instance was this of a bloody character. The treatment should be started with 0.15 gm. and raised in doses of 0.05 gm. until a point of tolerance has been reached. One man, weighing 112 pounds (50.8 kg.), was given as high as 0.8 gm. without showing any urinary changes, diarrhea or tenesmus, and only a slight gingivitis. Another advantage of increasing the dose of this drug over the other preparations of mercury is that the symptoms of hydrargyrism become apparent within a few hours, and one does not have to anticipate cumulative action causing salivation, hematuria and gastro-intestinal distress.

Value of Colloidal Benzoin Reaction.—A not inconsiderable experience with this test has convinced Osborne that it is superior to the colloidal gold test in its ease of performance, uniformity of result, reliability and amount of information furnished. It should have a wide field of usefulness in differentiating general paresis and incipient general paresis from the other forms of neurosyphilis.

Archives of Neurology and Psychiatry, Chicago

14: 581-730 (Nov.) 1925

"Word Blindness" in School Children. S. T. Orton, Iowa City.—p. 581.
*Closed Foramina of Luschka in Brains of Insane. J. F. Bateman, Cincinnati.—p. 616.
*Is Encephalitis an Infectious, Epidemic Disease? S. R. Salzman, Toledo, Ohio.—p. 638.
*Reactive Gliosis in Case of Brain Tumor. W. Freeman, Washington, D. C.—p. 649.
*Psychosis Associated with Trauma of Head. A. E. Taft and E. A. Strecker, Philadelphia.—p. 658.
Significance of "Accessory" Behavior Accompanying Vocal Reactions. L. B. Hohman, Baltimore.—p. 666.
Motor Disturbances in Peripheral Nerve Lesions. L. J. Pollock, Chicago. —p. 675.

Closed Foramina of Luschka in Brains of Insane. — An investigation was made by Bateman to determine in adult human material the closed or open condition of the lateral apertures of the fourth ventricle (foramina of Luschka). It was soon found that pouch-like closures of these foramina existed in many of the brains of the insane as well as of some normal persons. The material consisted of 901 brains; 666 were from insane persons, 150 from epileptic persons and eighty-five from presumably normal persons. Eighty-seven closures of the foramina of Luschka were found; sixty-seven of these were unilateral. In brains of the insane the percentage of closures was 11.6; in brains of epileptic persons, 5.3; in normal brains, 2.5. The evidence presented points in one direction; namely, that the marked unilateral deterioration of nervous substance observed in these cases may be interpreted, at least in part, as the result of inadequate circulation with stagnation of the fluid, and an accumulation of waste products due to such a type of obstruction as a closed foramen of Luschka on the same side.

Is Encephalitis Infectious Disease?—Salzman reports ten cases of encephalitis showing distinct infection in the gallbladder. These patients were treated for the most part surgically, with remarkable improvement in the encephalitis and clinical recovery in a few days. This experience in Salzman's opinion justifies the assumption that the encephalitis present in these cases was due to selective action of a toxin caused by infection within the gallbladder.

Reactive Gliosis in Brain Tumor.—The opinion of older writers that there is actual neuroglia overgrowth throughout the hemisphere which is the seat of a glioma, is borne out by a carefully controlled photographic study made by Freeman on unimpeachable material.

Psychosis Associated with Trauma of Head.—Taft and Strecker report a case of trauma sustained in infancy which determined a later developing dural tumor. The patient died at the age of 68, the last thirty-six years of her life being spent in a hospital for mental disease. Her psychosis suffered at the hands of changing psychiatric nomenclature. For many years, it was designated "chronic mania"; later, the opinion veered to dementia praecox. The patient sustained a fractured skull in infancy, and either it alone or in conjunction with the so-called "brain fever" (meningitis?) resulted in a partial left hemiplegia. At the end of the third decade of her life, her personality changed and she began to behave in a manner which, in the light of the injury of the head, suggested the likelihood of the development of a so-called traumatic constitution. At about this time she was placed in a hospital for mental diseases, and for at least twenty-three years had a psychosis marked by manic-like symptoms, but with enough disintegration to suggest dementia praecox. During all these years, there was only a single reliable objective phenomenon, namely, the "convulsion" six years before, which might have brought the head injury into consideration as an etiologic factor. The brain was removed immediately after the patient's death. On the inner surface of the dura, about at a point corresponding with the lower extremity of the central fissure, was a small, sharply circumscribed tumor, 2 by 1.25 by 1 cm. in diameter. The tissue showed the characteristics of meningeal endothelioma.

Journal of Industrial Hygiene, Baltimore

7: 481-538 (Nov.) 1925

Rural and Urban Health: II. Comparison of Past Diseases in University Students from Rural and Urban Districts. W. P. Shepard, Berkeley, Calif., and H. S. Diehl, Minneapolis.—p. 481.
Factory and Shop Legislation in Australia. D. G. Robertson, Melbourne, Australia.—p. 491.
Calcium and Tuberculosis; Influence of Inspired Dust on Specific Infection of Lungs. M. S. Isrard, Philadelphia.—p. 505.

Rhode Island Medical Journal, Providence

8: 177-192 (Nov.) 1925

Visual Standards for Motor Vehicle Operators. J. W. Leech, Providence.—p. 177.
Treatment of Cataract. J. L. Dowling, Providence.—p. 179.
Synergistic Analgesia in Obstetrics. I. H. Noyes, Providence.—p. 180.

Surgery, Gynecology and Obstetrics, Chicago

41: 457-700 (Nov.) 1925

Ureteral Strictures, Kinks and Abnormal Inserts. D. N. Eisendrath, Chicago.—p. 557.
*Fractional Ligation of Common Carotid Artery in Treatment of Pulsating Exophthalmos. H. H. Kerr, Washington, D. C.—p. 565.
*Study of Menstruation. S. D. Ludlum and E. McDonald, Philadelphia.—p. 569.
*Bronchoscopic Treatment of Lung Abscess. M. C. Myerson, New York.—p. 573.
Apophysitis of Os Calcis. P. Lewin, Chicago.—p. 579.
Intracranial Hemorrhage in the New-Born. W. Sharpe and A. S. Maclaire, New York.—p. 583.
*Intracranial Complications of Posterior Sinus Infections. E. B. Fink, Chicago.—p. 589.
*Developmental Anomaly of Patella Frequently Diagnosed as Fracture. J. D. Adams and R. D. Leonard, Boston.—p. 601.
Inguinal Hernia and Operative Procedure. R. H. Russell, Melbourne, Australia.—p. 605.
*Persistent or Preformed Sac in Relation to Oblique Inguinal Hernia. W. Hughson, Baltimore.—p. 610.
Primary Spindle Cell Sarcoma of Meckel's Diverticulum. G. W. Crile and U. V. Portmann, Cleveland.—p. 615.
*Retroperitoneal Cysts. H. W. Cave, New York.—p. 617.
Osteitis Fibrosa and Hyperostotic Form of Bone Syphilis. S. F. Wilhelm, New York.—p. 624.
*Peritonitis Ossificans. B. L. Myers, Kansas City, Mo.—p. 640.
Fatty Tumors of Uterus; Case. A. C. Starry, Sioux City, Iowa.—p. 642.
Study of Intramural Portion of Normal and Diseased Tubes with Special Reference to Question of Sterility. S. H. Geist and M. A. Goldberger, New York.—p. 646.
*Value of Leukocyte Count as Aid to Diagnosis in Ectopic Gestation. L. K. P. Farrar, New York.—p. 655.
*Duodenal Ulcer As a Complication of Pulmonary Tuberculosis. J. R. Lisa, Albany, N. Y.—p. 664.
*Total Gastrectomy for Linnitis Plastica. M. R. Reid, Cincinnati.—p. 667.
Technic of Tonsil Operation. E. H. Hutchins, Baltimore.—p. 673.
Blood Transfusion by Direct Syringe-Cannula Needle Method; Its Application in Major Surgery. A. A. Strauss, Chicago.—p. 678.
*Renal Roentgenography During Operation. M. C. Sosman, Boston.—p. 682.
*Simple Method of Determining Patency of Fallopian Tubes. S. Seides, New York.—p. 686.
Maintaining Patients in Prone Position Following Intracranial Operations. L. K. Ferguson, Philadelphia.—p. 687.

Fractional Ligation of Carotid in Pulsating Exophthalmos.—Kerr reports three cases of pulsating exophthalmos in which treatment was by common carotid ligation done by the original method of fractional ligation. In all cases the results were as good as could be expected. The operation was done in two stages. First, under local anesthesia, a strip of fascia lata from the thigh was passed around the common carotid below the bifurcation. The artery was gradually constricted until the pulsation of the eyeball ceased, but not to a sufficient extent to produce signs of cerebral anemia. The patient, being conscious, was able to cooperate in guiding the operators to a nice exactness of the extent of occlusion that could be made on the artery, short of producing serious symptoms. When this had been accomplished, the fascial band was sutured in situ with chromic catgut. The lumen of the artery had been reduced by about 50 per cent. by the maneuver. The wound was then closed. The immediate results were gratifying, in that the patient was not aware of the previous annoying bruit, though it could still be heard with the stethoscope. Three weeks later the vessel was again exposed through the former incision, and the common carotid artery ligated with a double ligature above the fascial band.

Nature of Menstruation.—The conclusion is reached by Ludlum and McDonald that menstruation is a time of vagotonia or vagus stimulation and that this can be shown in the smooth muscle reaction of the intestine. The wave of vagus preponderance begins from eight to two days before menstruation, reaches its height during the menstruation and returns to the intermenstrual condition from three to six days after menstruation. There is some evidence that among other factors this vagus preponderance is, in part at least, due to the accumulation of calcium in the blood and tissues and that calcium is cast off at the time of menstruation. It is possible that some of the preliminary pains of menstruation are due to intestinal cramps from vagus stimulaton. Drugs and salts which reduce the vagus stimulation relieve the menstrual pain.

Bronchoscopic Treatment of Lung Abscess.—A review of thirty-two cases of lung abscess in which bronchoscopy was systematically done by Myerson is given. Six patients were cured; nineteen were improved and four received no benefit from the treatment. Two patients died.

Intracranial Complications of Posterior Sinus Infections.—A case of suppurative posterior ethmoiditis and sphenoiditis with complete destructon of the optic nerve is described by Fink. The true intracranial pathologic condition was overlooked because attention was focused on the obvious manifestations of syphilis. The unilateral exophthalmos and primary optic atrophy should have suggested cavernous sinus thrombosis, but the patient entered the hospital in the terminal stages when the acute manifestations of nasal infection were forgotten. There was no evidence either grossly or microscopically of syphilitic involvement of the bony walls of the sinuses. The only influence of syphilis on the pathologic condition in this case was the interference with proper drainage produced by syphilitic scars in the nasopharynx.

Patellar Anomalies Mistaken for Fracture.—In a series of thirty-six cases of fractured patella reviewed by Adams and Leonard, in over 3 per cent. congenital anomalies were erroneously diagnosed as fractures.

Persistent Sac in Inguinal Hernia.—In a series of cases in which the inguinal canal was opened on account of a relaxed ring and in which no clinical evidence of hernia was seen, in every instance a small persistent sac was found. Analysis of a group of cases by Hughson shows that 16 per cent. of the patients presenting hernia on one side eventually develop hernia on the opposite side. It is felt that correlation of these facts lends further strong support to the preformed sac theory in regard to the etiology of all inguinal hernia. A study of 100 consecutive cases of both single and double herniotomies has shown that the double operation increases the incidence of postoperative pulmonary infections, but it does not increase the incidence of wound infection.

Retroperitoneal Cyst.—Cave reports a case of cystic tumor of the retroperitoneal space, not attached to any solid or hollow viscus, but supposedly originating in vestigial remains of fetal structures.

Peritonitis Ossificans. — Myers reports an ossification, apparently analogous to myositis ossificans, deserving the nomenclature of "peritonitis ossificans." Search of the literature has failed to reveal a similar case. The mass, measuring 4 by 9 by 12 mm., was found about the tip of an atrophic appendix. It was surrounded by omentum, which closely adhered to the mass in all of its nonappendiceal attachments.

The portion attached to the appendix was so firmly fixed that the peritoneal coat was stripped off in delivering the mass.

Leukocyte Count as Diagnostic Aid in Ectopic Gestation.—Farrar has reviewed 150 cases of ectopic gestation with reference to the leukocyte count. He found that it fluctuates according to the amount of fresh blood being thrown into the peritoneal cavity and the rate of absorption. The leukocyte count tends to drop quickly to normal as the blood in the peritoneal cavity is absorbed or walled in; in 48 per cent. of 150 cases of ectopic gestation, there was a normal leukocyte count before operation was performed. The leukocyte count was normal in twenty-nine cases of unruptured tubal pregnancy in which there was no free blood and in forty-three cases of ruptured pregnancy in which the blood was walled in. The leukocyte count was an index in 150 cases to the amount of free blood in the peritoneal cavity, and the polymorphonuclear leukocyte count was increased markedly only in cases showing fresh blood in the pelvis and increased in direct proportion to the amount of recent blood found at the time of operation. The fluctuating leukocyte count, together with the moderate elevation of temperature, differentiates ectopic gestation from a purulent salpingitis with its more uniformly high leukocyte count and fluctuating temperature. In cases of rupture of tubal pregnancy the steadily rising leukocyte count indicates active bleeding before the fall in the number of red cells or hemoglobin gives warning of the condition. The leukocyte count, to be of diagnostic value, must be taken at least daily and in critical cases even hourly and used in conjunction with the history and clinical findings in the case.

Relation of Duodenal Ulcer to Pulmonary Tuberculosis.—In an effort to procure additional information bearing on the relation of duodenal ulcer to pulmonary tuberculosis, Lisa has reviewed two series of necropsies performed by him. One of the series consists of 257 necropsies in cases of pulmonary tuberculosis, including cases in which the tuberculosis was primary in other systems but also showing pulmonary involvement; and for comparison, another series of 209 necropsies which showed no tuberculosis. In the first group there were nine duodenal ulcers; in the second group, four. The ulcer is usually nontuberculous in character. Pulmonary tuberculosis associated with duodenal ulcer is usually of chronic form. The age of most frequent occurrence of ulcer is from 25 to 35 years.

Total Gastrectomy for Linnitis Plastica.—Reid reports a case of linnitis plastica treated by a complete excision of the stomach. Restoration of the continuity of the alimentary tract was effected by an esophagojejunal and a jejunojejunal anastomosis. A study of the stomach revealed a diffuse sclerosing type of scirrhus carcinoma which involved all of the stomach except a small portion of the fundus. This operation was done in November, 1924. The patient, aged 51, has continued to take a soft diet and has gained weight. She has not vomited, and has recovered her health and strength to such an extent that she is doing her own housework. The only discomfort she experiences now is a sensation of fulness after eating small amounts of food. She is, however, gradually taking more food at a time. The only medication consisted of dilute hydrochloric acid, 10 minims, and pepsin solution, 1 c.c., three times a day. Since leaving the hospital the patient has continued to take the hydrochloric acid but has discontinued the use of the pepsin solution.

Renal Roentgenography During Operation.—Roentgenography of the kidney exposed at the operating table is shown by Sosman to be practical as well as practicable, and of great importance in operations for renal calculi. Its advantages over fluoroscopy under the same conditions are discussed. Twenty-five patients have been examined in this manner.

Determining Patency of Fallopian Tubes.—Seides uses a sphygmomanometer, a uterine cannula, a T tube, and some rubber tubing. The blood pressure cuff is detached from the syphgmomanometer and the T tube and cannula assembly connected with it. The bulb is worked in the same manner as when one takes the blood pressure. After the cannula is introduced into the cervix and properly adjusted, the bulb is compressed very gently so that the pressure rises only from 5 to 10 points with each compression. After each compression of the bulb the operator pauses a moment to note the rise of the mercury. When the pressure reaches a height sufficient to open the tube (in patent cases) and cause the escape of air into the peritoneal cavity, the mercury begins to drop, and continues to drop, until the pressure becomes equal to the resistance offered by the tube. At that point the mercury remains stationary. The bulb is now compressed again, driving the mercury up from 10 to 20 points. When the bulb is released the mercury falls rapidly to its former height or a little lower. Another compression of the bulb causes a repetition of the previous occurrence. This is evidence that the patency of a fallopian tube has been established. So small is the amount of air introduced by this method that the shoulder pain does not appear until after the patient has been up and about for several minutes. This pain though definite and unmistakable is so mild that, as a rule, it does not interfere with the patient's customary activities and disappears entirely within twenty-four hours.

U. S. Naval Medical Bulletin, Washington, D. C.

23: *329-444* (Nov.) *1925*

Vital Capacity Test. D. Ferguson.—p. 329.
*Expediting Diagnosis of Syphilis by Employment of Kahn Precipitation Test. J. E. Houghton.—p. 347.
Surgery of Bladder. W. S. Pugh.—p. 354.
Surgical Treatment of Suppurative Otitis Media in Children. G. B. Trible.—p. 362.
Centers of Endemic and Prevalent Disease in China. H. E. Coe.—p. 368.
Use of Chlorin Gas at Naval Training Station, Hampton Roads, Va. W. C. Espach and O. Wildman.—p. 373.
Pilonidal Sinus; Three Cases. W. A. Strauss.—p. 376.
*Polioencephalitis or Acute Inferior Encephalitis; Case. C. D. Middlestadt.—p. 379.
Ulcerative Colitis; Case. H. M. Weber.—p. 384.
Blood Transfusion. J. L. Thornton.—p. 387.

Kahn Test for Syphilis.—In Houghton's opinion, the Kahn test possesses superior qualities over the Wassermann reaction and the various precipitation procedures now in use. It offers a standard and stable antigen which can readily be prepared in a central laboratory for supplying other laboratories. It offers a diagnostic procedure with serum, the specificity of which has not been questioned by a large number of workers. The procedure appears to be superior to any test available at this time, being influenced neither by contamination nor by anticomplementary properties. The Kahn test further offers a quantitative procedure which is of especial value as a check on treatment. None of the procedures of the Kahn test require incubation, all reactions being completed on mixing the ingredients and shaking for a few minutes. This renders it possible to obtain the results at any time instead of the usual once or twice a week serologic examinations.

Acute Hemorrhagic Encephalitis.—A fatal case of acute hemorrhagic encephalitis, with both inferior and superior involvement, but with symptoms which point to the predominance of the inferior type, toxic in origin, probably infectious and brought on and aggravated by trauma, is reported by Middlestadt. The symptoms presented in this case were probably due to the hemorrhages in the base of the brain and in the third and fourth ventricles.

West Virginia Medical Journal, Huntington

21: 561-616 (Nov.) 1925

Conservative Trend in Gynecology. P. B. Bland, Bluefield.—p. 561.
Comparison of Nitrous Oxid and Ethylene Anesthesia. L. D. Norris, Fairmont.—p. 580.
Plea for Tonsil. W. T. Booher, Wellsburg.—p. 590.
Tonsil Question. E. R. McIntosh, Elkins.—p. 594.
Object and Workings of "Professional Relationship Committee." J. R. Schultz, Charleston.—p. 599.

Wisconsin Medical Journal, Milwaukee

24: *287-350* (Nov.) 1925

General Biologic Considerations. M. F. Guyer, Madison.—p. 288.
Biologic Basis of Immunity. K. E. Kassowitz, Milwaukee.—p. *300*.
Influence of Ductless Glands on Biologic Reaction. E. C. Kendall, Rochester, Minn.—p. 303.
Cell Reactions in Resistance and Immunity. C. H. Bunting, Madison.—p. 305.
Care of Insane. H. H. Christopherson, Colby.—p. 311.
Treatment of Finger Infections. R. M. Carter, Green Bay.—p. *312*.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal

42: 157-200 (Autumn) 1925

Diagnosis of Scarlet Fever. J. Wallace.—p. 157.
Comparative Efficiency of Local Anesthetics. E. Watson-Williams.—p. 164.

British Medical Journal, London

2: 727-774 (Oct. 24) 1925

*Heredity in Relation to Mental Disease. F. Mott.—p. 727.
Sensitization and Desensitization in Skin Disease. H. MacCormac.—p. 731.
*Biochemical Characters of Certain Bacteria. A. Castellani.—p. 734.
Rôle of Surgery in Treatment of Backward Displacement of Uterus: Discussion. I. F. Ivens.—p. 736.
II. H. R. Andrews.—p. 739.
III. R. H. Paramore.—p. 740.
Pathology and Treatment of Erosion of Cervix. G. I. Strachan.—p. 743.
Obstruction Due to Gallstone. J. Livingston and G. Alexander.—p. 745.
Protein Shock in Epidemic Encephalitis. J. R. Collins.—p. 745.
Epidemic of Mumps. E. J. C. Dicks.—p. 745.

Heredity in Relation to Mental Diseases.—From a practical consideration of the subject of insanity, Mott says it is very necessary to recognize that the germ cells of every person who is certified as insane and sent to a mental hospital are not necessarily possible potential transmitters of a mental disease. General paralysis of the insane and many other microbic infections leading to disordered mental functions are acquired diseases and are not hereditary. Nor is it right to assume that simple senile decay affecting the brain is transmissible, yet a large percentage of inmates of asylums are sent there on account of senility. These legal administrative conceptions of mental disease must therefore vitiate all statistics in respect to heredity as a cause of mental disease, because based on data in which admission to a mental hospital are in many instances the sole evidence. This does not apply to the same extent to carefully recorded pedigrees; but even these are not free from error, for often all the information that can be obtained is that one or more members of the stock has been in an asylum. Mott says further that the term "hereditary syphilis" is a misnomer. Much may happen while the embryo is still in utero. The normal biologic processes of nutrition of the developing embryo may fail; abnormal mechanical conditions may arise in the uterus, interfering with the proper development of the embryo; or mechanical conditions in the process of development of the embryo may arise, interfering with the development of the structure. Of all the structures in the body of the embryo likely to be affected by a departure from normal dynamic biologic conditions of growth, the great brain or cerebrum is the most likely. Many mechanical failures and accidents may occur, interfering with the vascular supply of nutrition of the rapidly proliferating cells, whereby the process may be arrested altogether, as in anencephaly, or partially arrested, as in the brain of the idiot or low grade imbecile. There is evidence of a possible vascular cause through a lack of correspondence in a normal rate of growth of the dura mater and soft membranes and the growth of the brain. Because of this, the veins enter the longitudinal sinus in a direction opposite to the current of the blood stream in the frontal lobes—an anatomic condition that favors venous stasis. Again, prolonged labor and difficulties in delivery requiring the use of instruments may be responsible for injury of the brain.

Biochemical Characters of Bacteria.—It appears from Castellani's experiments that, with regard to certain bacteria, when two species live in association or are artificially mixed, their mixture may present certain biochemical characters that neither species possesses when living separately. For example, *B. typhosus* alone produces acidity, never gas, in maltose, mannitol and sorbite; *B. morgani* alone produces neither acidity nor gas in these substances; the mixture *B. typhosus* plus *B. morgani* produces, however, both gas and acidity, although one would expect that by adding to a germ, which produces a simple acidity and never gas, one that produces neither acidity nor gas, there would still be only production of simple acidity. The phenomenon of fermentation with production of gas of certain substances, such as maltose, mannitol, and sorbite, by adding to a germ, which produces in them simple acidity and never gas, a germ that is apparently inert on those substances—that is, produces alone neither acidity nor gas in them—seems to depend to some extent on the fermental powers of the second germ on certain other carbohydrates. For instance, not all bacilli inert on mannitol will cause production of gas in that substance when added to *B. typhosus*, which produces in it only acidity; a condition for the phenomenon to take place seems to be that the added germ, although inert on mannitol, must be capable of producing acidity and gas in glucose. It must be noted, however, that not every organism producing gas in glucose and neither acidity nor gas in mannitol will cause production of acid and gas in the latter substance when added to a producer in it of simple acidity, such as *B. typhosus*.

Lancet, London

2: 899-952 (Oct. 31) 1925

Pituitary Gland as Now Known. H. Cushing.—p. 899.
Physiology of Muscular Action. A. S. B. Bankart.—p. 906.
*Nature of Urinary Protein. A. Hynd.—p. 910.
Case of Abdominal Lymphadenoma. L. R. Shore and W. A. Young.—p. 915.
*Globulin and Colloidal Gold Reactions of Cerebrospinal Fluid After Malarial Treatment of General Paralysis of Insane. J. E. Nicole and J. P. Steel.—p. 917.
Traumatic Lesion of Cauda Equina; Laminectomy; Recovery. E. R. Carling and H. Carlili.—p. 917.
Intestinal Hemorrhage Controlled by Coagulen. L. C. D. Irvine.—p. 918.

Nature of Urinary Protein.—Experimental evidence is submitted by Hynd which shows that the protein excreted in the urine in various conditions is not always identical. In the twelve cases investigated of "albuminuria of pregnancy" without convulsions, the specific rotation of the urinary albumin averaged — 55.81 degrees and thus agreed with that found for human serum albumin under similar treatment; namely — 54.47 degrees. A similar close agreement in specific rotation, namely, —54.25 degrees, was found in five cases of proteinuria not associated with pregnancy. On the other hand, the fourteen cases of eclampsia investigated were sharply divided into two groups, one group of six having an average $[\alpha]_D$ of — 56.37 degrees, and the other group of eight having an average $[\alpha]_D$ of — 38.5 degrees. The optical activity of the albumin in the former group agrees well with that of serum albumin (— 54.47 degrees), while that in the latter approximates closely that of cow's lactalbumin (— 41.17 degrees). Accordingly, it is suggested (*a*) that in certain types of eclampsia the urinary albumin may be mainly lactalbumin; (*b*) that eclampsia may be an anaphylactic reaction due to the circulation in the blood of this foreign protein; and (*c*) that the mammary gland may be an important factor in the causation of eclampsia.

Cerebrospinal Fluid After Malarial Treatment of Insane.—During the observation of eighty cases in which general paralysis was treated with therapeutic malaria, it has been found expedient by Nicole and Steel to reexamine the cerebrospinal fluid in twenty-five cases at varying dates after the termination of the pyrexia. More than half the cases now show a negative reaction to the globulin test, whereas all showed a positive result before treatment. As regards the colloidal gold reaction, even allowing for the human element in taking the readings, the changes more or less correspond in their occurrence with the conversion of a positive globulin reaction into a negative one; furthermore, the change has not only been the "displacement to the left and upward" mentioned by Pappenheim, but is also of the nature of a conversion of a true paretic reading to that more usually associated with a diagnosis of cerebrospinal syphilis. Of those patients admitted in an advanced condition of general paralysis (showing progressive dementia and faulty habits coupled with physical debility), out of a total of twelve, eight have shown no appreciable alteration in the reactions of the cerebrospinal fluid after treatment with malaria. On the other hand, definite changes in these respects have been shown in ten of the thirteen early cases.

South African Medical Record, Cape Town

23: 397-420 (Sept. 26) 1925

Analysis of 1,250 Confinements of Colored Women in Cape Town. A. S. Wells.—p. 398.
*Results of 143 Consecutive Cases of Suprapubic Prostatectomy. H. T. Mursell.—p. 404.
*Desensitization of Patient Hypersensitive to Bee Stings. L. I. B. Braun. —p. 408.
Nursing Homes: Regulation and Medical Inspection. C. Porter.—p. 409.
*Familial Incidence of Peroneal Type of Progressive Muscular Atrophy (Charcot-Marie-Tooth Disease). I. Mirvish.—p. 411.
Case of Osteitis Deformans. S E. Kark.—p. 412.
Pellagra in South Africa. J. Drummond.—p. 413.
Bilharzia Disease of Female Genital Tract. R. W. B. Gibson.—p. 413.
Comparison of Cardiac Mortality in Johannesburg, Cape Town and Durban. E. Cluver.—p. 414.
Case of Myelogenous Leukemia. F. H. Dommisse.—p. 415.

Results from Suprapubic Prostatectomy.—Of the 143 cases in Mursell's series, sixteen patients died in hospitals or nursing homes, a mortality of 11.2 per cent. Fifty consecutive hospital cases, as distinct from private cases, showed a mortality of 14 per cent. The higher mortality is attributable to the fact that many of the hospital cases are of long standing, and the patients only present themselves for treatment when complete retention compels them to come.

Desensitization to Bee Stings.—Braun snipped off the posterior one-eighth inch of the body of the bee. This part of the body contains the poison bag into which leads the acid gland. The poison bag leads directly into the gorget or sting. The poison was extracted by grinding up in saline solution. To test for sensitivity in the patient, Braun scarified an area one-eighth inch square without drawing blood, and applied 1 drop of the solution. Within five minutes the spot became very red, and soon after a wheal formed, which spread rapidly. Within a further three minutes, the patient began to complain of a general reaction. The face and neck started to swell and the conjunctivae became injected. At the same time the patient began a peculiar sort of suffocating cough, which never ceased for more than thirty seconds. A violent tremor set in, which soon became generalized. The pulse mounted to 120, and altogether the patient's condition became rather alarming. The wheal at the site of vaccination became larger and larger, and soon the whole body was covered with a red urticaria which showed up dull white on stretching the skin. As the condition remained the same after about twenty minutes, and as the patient was beginning to show mental distress, Braun injected 10 minims of epinephrin. Gradually the signs and symptoms subsided, with the exception of the trembling, which persisted for some time. During this attack, the patient experienced bearing-down pains and mental anxiety. Desensitization was carried on by injecting gradually increasing doses until the patient was receiving 15 c.c. undiluted venom.

Familial Incidence of Progressive Muscular Atrophy.—Four of five children were affected in Mirvish's series of cases. The father and mother apparently were not affected. In all four cases the mode of onset was similar. Up to the age of 17, the patients were perfectly healthy and normal; they attended school, and used to run and play like other children of their age. The onset of the disease was insidious, and the first definite symptom was "lameness" in the lower extremities. There is now flaccid paralysis below the knee and spastic paralysis above it. With assistance they can stand up; they sit propped-up in a chair most of the day. Ulcers appeared on the legs and feet and still occur frequently, but they heal well, as a rule. In the case of two brothers, no edema of the legs has been observed during the last two years. They both showed pes equino varus; the leg muscles show atrophy, more marked on the right side than on the left. The anterior aspects of the legs and dorsum of the feet have areas of glossy skin and pigmented scarring of healed ulcers. In the woman, there is considerable edema of the feet, pitting on pressure; owing to the edema, the presence of any atrophy of muscles cannot be made out. The woman also has scars of ulcers. The patients all show atrophy of the small muscles of the hand. This is most marked in the woman, who also has wasting in the distal part of the forearm. Blueness and cyanosis of the legs below the knees, and, in the woman, below the elbows, rapidly develops when the extremities are in a dependent position for a short time. The patients are fatuous and childish in many respects. Their intellect is very poor, and answers to questions are very often erroneous. There is also wasting of the muscles below the knee and the small muscles of the hands, especially the thenar and hypothenar muscles, and paralysis of the muscles of the leg and foot. The knee cannot be bent because the muscles of the thigh are spastic. Some spasticity of the hands is also present. Muscular coordination is not impaired. Fibrillary twitchings occur in the muscles of the thigh, in the thenar and hypothenar eminences, and in the temporal and masseter muscles. Peronei of the right leg do not respond to the faradic current; all other muscles of the legs do.

Tubercle, London

7: 1-56 (Oct.) 1925

Treatment of Disease with Heavy Metals and Bactericidal Agents. W. E. Dixon.—p. 1.
*Combating Tuberculosis in Denmark. J. Ostenfeld.—p. 6.
Results of Artificial Pneumothorax and the Rôle of Other Operative Collapse Procedures in Treatment of Phthisis. R. C. Matson, R. W. Matson and M. Bisaillon.—p. 12.
Specific Inflammatory Reactions Accompanying Immunity. E. L. Ore. —p. 23.
Conditions Necessary to Arouse Allergic State in Tuberculosis; Immunity Through Fixation of Bacteria. A. K. Krause,—p. 29.

Combating Tuberculosis in Denmark.—In 1905 the Danish Rigsdag passed the Danish Tuberculosis Acts which, through the very comprehensive provisions regarding state grants, rendered it possible to introduce an extensive attack on the disease. Isolation and treatment in hospitals of patients suffering from tuberculosis were made the chief points. Owing to the extensive provisions of state grants provided under the Danish Tuberculosis Acts, it was rendered possible to found a sufficient number of hospital beds, partly in sanatoriums erected by means of considerable grants-in-aid from the state in connection with considerable contributions provided through the intense efforts of private individuals, partly in tuberculosis hospitals built by the municipalities, and also by means of state grants. Every person suffering from tuberculosis and without means can be treated free of charge, and in the case of destitute persons the municipality further has to contribute to the support of the family as long as the breadwinner is under treatment in hospital or sanatorium. In addition the tuberculosis acts contain very comprehensive provisions in other directions, of which the following should be specially noticed: (1) obligatory notification of all cases of pulmonary or laryngeal tuberculosis; (2) disinfection, free of charge, on deaths due to tuberculosis, or on removal of a patient suffering from tuberculosis; (3) examination, free of charge, of sputum, in order to verify tubercle bacilli; (4) education, free of charge, of children suffering from pulmonary tuberculosis, in special departments or schools; (5) definite provision as to grant-in-aid from state and municipality for the working expenses of tuberculosis stations (dispensaries). In 1922, 4,907,400 gold francs were appropriated for this work. At present there are seventy-two tuberculosis institutions with 3,458 beds. In 1900, before this act was in force, there were twenty-three deaths per 10,000 population. In 1923, there were 9.6 per 10,000 population.

Annales de Médecine, Paris

18: *167-246* (Sept.) 1925

*Tabes with Osteitis Deformans. G. Guillain and N. Péron.—p. 167.
Localized Form of Achondroplasia. R. Porak.—p. 179.
*Sugar in Cerebrospinal Fluid. Fontanel et al.—p. 186.
*The Hemotonia Factor in Sedimentation Test. Balachowsky.—p. 201.
Development of the Nervous System. J. Lhermitte.—p. 209.

Tabes Associated with Osteitis Deformans.—Guillain and Péron point to their case, in a man, aged 54, which may confirm the syphilitic origin of certain cases of Paget's disease. The spontaneous fracture of the femur in their case might be ascribed to the tabes as well as to the osteitis deformans.

Diagnostic Value of the Sugar Content of the Cerebrospinal Fluid.—Fontanel, Leulier and Rouquier conclude from 350 tests of the cerebrospinal fluid that a reduced amount of the sugar may help in differentiation of tuberculous meningitis from epidemic encephalitis in which the sugar is usually increased. No diagnosis can be based on an exaggerated sugar content since this may be encountered in normal subjects as well as in various pathologic conditions.

The Hemotonia Factor in the Sedimentation Test.—Balachowsky applies this term to express the elasticity of the erythrocytes. The less the elasticity, the lower the upper surface of the sediment.

Archives des Maladies de l'Appareil Digestif, Paris

15: *631-750* (July) 1925

*Basal Metabolism During Fasting. M. Labbé and H. Stévenin.—p. 631.
*Roentgen Rays and Gastric Secretion. P. Brocq and P. Oury.—p. 644.
Functional Stomach Tests. S. Cytronberg.—p. 664.
Compensation in Small Intestine After Colectomy. A. G. Weiss and P. Porcher.—p. 692.

The Basal Metabolism in Prolonged Fasting.—Labbé and Stévenin's research was made on a man, aged 42, voluntarily fasting for forty-one days. Their findings as well as those of several other authors in fasting subjects showed a decrease of the respiratory metabolism. The loss of weight was less in the subject in whom reduction of the metabolism was more pronounced. This fact and the increased metabolism with overeating prove the adaptation of the organism to the intake of food. Evidently the functioning of the endocrine glands is not exclusively responsible for the basal metabolism rate.

Action of Roentgen Rays on Gastric Mucosa.—Direct exposure of the gastric mucosa to roentgen rays in Brocq and Oury's experiments showed that the lesions from the rays were circumscribed and comparatively insignificant, even with doses far superior to those ever used in therapeutics. This fact, the authors say, suggests that the roentgen rays may become in the future an effectual and harmless method of treatment for stomach disease in man. They irradiated the mucosa through a stomach fistula (dogs) giving 500 R unit doses at a time, up to a total of 7,000 R units (Solomon ionometer). Secretion fluctuated at first then declined.

Bulletin de l'Académie de Médecine, Paris

94: 917-940 (Oct. 27) 1925

*Remote Results of Sympathectomy. T. Jonnesco.—p. 919.
Monosodium Citrate in Therapeutics. R. Blondel.—p. 931.
*Change of Air in Whooping Cough. Barbary.—p. 936.

Heart Functioning After Sympathectomy.—Jonnesco reports cases which, he thinks, prove that sympathectomy is not dangerous, while it is the only effectual operation for angina pectoris. He has collected seventy-four cases in which different methods of sympathectomy were applied; the mortality was about 20 per cent. in all. His cervicothoracic resection was applied in thirty-two cases; in twenty-four, partial cervical sympathectomy (including resection of the stellate ganglion), and resection of the depressor nerve, in eighteen. One man, operated on for angina pectoris nine years before, keeps an employment requiring physical strain, much walking, without any disturbance of the heart. In another a bilateral sympathectomy was made three years ago, and the man still works as a woodcutter. Still another, submitted to a total sympathectomy for exophthalmic goiter twenty-one years ago, served as a soldier in the active army during the war. Two girls treated by bilateral sympathectomy twenty-five years ago, for epilepsy, are at present mothers of six and seven children. No disturbances of the heart appeared during their repeated pregnancies. Left cervicothoracic sympathectomy was applied ten months ago in a man with severe angina pectoris. There has been no recurrence of the attacks of angina pectoris and the condition of the heart is good, notwithstanding severe occupational strain. He reaffirms that the stellate ganglion should be the main point of attack.

The Change of Air Tradition in Treatment of Whooping Cough.—Barbary ridicules the popular belief that change of air may check whooping cough. The only effect from transporting a child with whooping cough from one place to another may be the spread of the disease, and therefore it should be strictly forbidden.

Bulletins de la Société Médicale des Hôpitaux, Paris

49: 1339-1368 (Oct. 30) 1925

*"Hemophilia-Hemogenia." L. Babonneix.—p. 1339.
*Parkinson's Disease with Syphilis. Babonneix and Pollet.—p. 1340.
Multiple Affection of Glands or Tuberculous Lymphomas? L. Babonneix and L. Pollet.—p. 1341.
"Lambliasis of the Gallbladder." M. Chiray and J. Lebon.—p. 1344.
*Tumor of the Frontal Lobe. Lechelle et al.—p. 1347.
The Course of Endocarditis. M. Renaud.—p. 1352.
*Glucose Regulation in Infectious Disease. Labbé and Boulin.—p. 1358.

"Hemophilia-Hemogenia." — Babonneix cites Heberden, who described in 1802 a case of joint disease similar to that in hemophilia, associated with fragility of the vessels manifested by spontaneous appearance of ecchymoses.

Nonspecific Affection of Central Nervous System in a Syphilitic.—Babonneix and Pollet observed a case of typical Parkinson's disease in a syphilitic man, aged 47. The contrast between the strongly positive Wassermann reaction in the blood and the completely normal cerebrospinal fluid indicated that the coexisting paralysis agitans was of nonspecific nature.

Tumor of Frontal Lobe.—Lechelle and his co-workers report two cases in which recurring attacks of somnolency formed the early and predominant symptom. In the first case the narcolepsy developed into coma, simulating epidemic encephalitis; in the other it was followed by progressing hemiplegia. Lumbar puncture and clinical signs revealed intracranial hypertension from a brain tumor. The early narcolepsy had suggested the diagnosis of a tumor located in the infundibulum, or area of the third ventricle. Necropsy showed a glioma of both frontal lobes in one case, and tuberculoma of one frontal lobe in the other.

Derangement in Sugar Regulation in Course of Infections.—Labbé and Boulin applied the alimentary hyperglycemia test in twelve patients with various infectious diseases. During fasting, the glycemia appeared slightly increased. The rise and fall of the glycemia curve was four times longer than usual; the maximum of hyperglycemia increased by 50 per cent. The hyperglycemia triangle was ten times larger, thus revealing an important change of the sugar regulating balance. Alimentary glycosuria was noted in 75 per cent. The disturbance of glucose regulation did not parallel the gravity of the infection; as was shown in cases of typhoid and febrile rheumatism. The impairment of the glucose balance sometimes became more pronounced during convalescence, and persisted for weeks, even months after recovery from the infection. This paradiabetic condition occurred chiefly in young subjects and seemed to disappear completely. No signs of an insufficient functioning of the liver could be detected. It is possible that recurrences of this transient disturbance of glucose balance create a true diabetes more frequently than hitherto believed.

Paris Médical

57: *361-396* (Nov. 7) *1925*

Pediatrics in 1925. P. Lereboullet and Saint Girons.—p. 361.
Subcutaneous Injections of Milk. Marfan and Turquety.—p. 377.
Isolated Glandular Lesions After Scarlet Fever. P. Nobécourt and L. Lebée.—p. 385.
*Peptic Ulcer in Children. E. Stulz and P. Woringer.—p. 387.
Masked Congenital Syphilis. P. Lereboullet and J. Brizard.—p. 393.

Peptic Ulcer in Meckel's Diverticulum in Children.—Stulz and Woringer refer to two personal cases and eleven in the literature. The ages ranged from 5 months to 15 years, and the lesion developed exclusively in boys. Profuse intestinal hemorrhage is the first symptom, and also the most constant complication. It is characterized by an unchanged color of the blood, and the tendency to recurrence. The hemorrhage may persist a few days or even weeks, causing grave anemia and death. Perforation of the ulcer occurred in ten of the thirteen cases. Seven died from perforation with generalized peritonitis; one from anemia with localized peritonitis; the remaining five were saved by an operation. They cite the points differentiating this affection from a perforated diverticulitis, intestinal invagination and polyp or tumor of the large intestine. Treatment has to be essentially surgical.

Presse Médicale, Paris

33: 1425 1440 (Oct. 28) 1925

*Skin Reaction to Wine in Gout F Widal et al—p. 1425.
*Ossification of Fractures. R. Leriche and A Policard—p 1426.

Skin Reaction to Wines in Gout.—Tests were made with different wines in nineteen patients, aged from 30 to 72, in various stages of articular gout An intense reaction was manifest in three cases, a slight in thirteen and the response was negative in three The reaction was negative in thirty-nine of forty-four persons, healthy or with another disease Widal and his co-workers emphasize that the sensitization of the gouty patients seemed to be induced always only by one kind of wine

Mechanism of Healing of Fractured Bones.—Leriche and Policard summarize the process of ossification. The traumatic hemorrhage is followed by formation of clots and appearance of embryonal connective tissue Congestion in the area of fracture induces bone resorption and production of calcium salts. The two facts cause ossification, occurring by the sixth to the tenth day. Healing is prevented if one of these factors is lacking.

33: 1441-1456 (Oct 31) 1925

*Polyneuritis with Epidemic Encephalitis Beriel and Devic—p 1441.
*Etiology of Endemic Goiter. A. Ravina—p 1442

"Peripheral" Form of Epidemic Encephalitis.—Bériel and Devic describe two personally observed cases and one of Sicard's with clinically associated phases of epidemic encephalitis and polyneuritis. The virus of epidemic encephalitis can evidently affect the peripheral nerves and roots as well as the meninges. The prognosis of this polyneuritis is favorable; it persists from one to five or six months, but without inducing any notable atrophy of the muscles. The differentiation from acute anterior poliomyelitis may be based on the milder invasion of the disease, and the slower appearance of paralysis. The usual treatment for polyneuritis should be applied in these cases.

Intestinal Virus as Factor in Etiology of Goiter.—Ravina analyzes the different theories of endemic goiter. He believes that McCarrison's experiments on man and animals in India present strong evidence in favor of the etiologic significance of water contaminated with fecal matters from persons with goiter. Although the specific virus still eludes discovery, there is much to sustain the theory of an infectious, intestinal origin.

Schweizerische medizinische Wochenschrift, Basel

55: 993 1016 (Oct. 29) 1925

*Local Spasms of Muscles. R. Bing—p. 993
Roentgen Ray Examination in Accident Cases. G. Baer.—p. 1000. Begun p 975
*"Hystero Epilepsy" E Bleuler.—p. 1005.
*Autoserotherapy in Pleurisy. D. Pometta—p 1005.

Local Spasms of Muscles.—Bing analyzes various tics and local spasms and their relation to hyperkinesis of subcortical origin. He believes that various hysterical symptoms are also directed from these centers. In this case the inhibition exerted by the superior centers on the ontogenetically and phylogenetically older automatic centers is removed by the psyche—not by organic disease, as in encephalitis. He explains the resemblance between the symptoms of a major hysterical attack and those of coitus partly by denying it, partly by pointing out that coitus is the only ecstasy-producing, that is, inhibitions-releasing occasion for civilized people. (Die einzige Gelegenheit bei welcher der gesunde, nuchterne Kulturmensch unserer Zeit noch in "Ekstase" zu geraten pflegt; beim Hysteriker aber vermögen auch andere affektgeladene Situationen Enthemmungsphanomene freizumachen). Bing emphasizes that the effect of psychotherapy does not exclude an organic basis for a disease.

Hystero-Epilepsy.—Bleuler protests against the use of the term "hystero-epilepsy." With the same logic, we would have to call a combination of tabes and tuberculosis, "tuberculo-tabes."

Autoserotherapy in Pleurisy.—Pometta finds that the beneficial effects of autohemotherapy in pleurisy are doubtful. There can be no doubt, however, as to the possibility of inoculating tuberculosis subcutaneously.

Pediatria, Naples

33: 1141-1196 (Nov. 1) 1925

*Diphtheria Immunization with Schick Tests. Ivo Nasso—p. 1141.
*Atypical Malaria in Children. G Macciotta—p 1151.
*Vitiligo and Congenital Syphilis P. Fornara—p. 1170.
Congenital Dislocation of the Hip Joint N. Caprioli—p. 1182.

Diphtheria Immunization with Schick Tests.—Nasso confirmed a weakening of the Schick test if repeated after ten or fifteen days Three or four such tests were sufficient to change the response to negative. Estimation of the antitoxin content in the serum of such children showed that the immunization is real.

Atypical Malaria in Children.—Macciotta points, among others, to a hypothermic form.

Vitiligo and Congenital Syphilis.—Fornara observed nine cases of vitiligo among 3,000 children. Congenital syphilis was certain in four, doubtful in two, and excluded in three of his nine cases Vitiligo may occur also in acquired syphilis.

Riforma Medica, Naples

41: 961-984 (Oct. 12) 1925

*Passage of Intestinal Germs into the Circulation. Pansini.—p. 961.
Tuberculosis of Appendix G Razzaboni—p 965.
*Antagonism of Superficial and Visceral Arteries C. Trunecek.—p. 968
Mega Ureter. E Aievoli—p. 971.

Passage of Intestinal Germs Into the Circulation.—Pansini concludes from his investigations that in weakened conditions and in intestinal diseases some germs may penetrate from the bowel into the general circulation.

Antagonism of Superficial and Visceral Arteries.—Trunecek attributes the antagonism between peripheral and visceral vasoconstriction to the different structure of the arteries, especially the arrangement and thickness of the longitudinal and circular muscle layers

Brazil-Medico, Rio de Janeiro

2: 81 94 (Aug. 15) 1925

*Periarterial Sympathectomy. A. Valerio—p. 81.
Case of Epispadias. J R da C. Doria—p 84.
Keratitis in Congenital Syphilis. E Campos—p. 89.

Periarterial Sympathectomy.—Valerio removed the adventitia of the femoral artery for a stretch of 12 or 15 cm. on each side in treatment of bilateral mal perforant The interval between the operations was nearly three weeks. A few days after each operation the trophic ulcers began to bleed and presented an intense inflammatory reaction, then rapidly healing over. The man had a history of malaria and syphilis but saturation with quinin and with arsphenamin had not modified the lesions on the feet. The long rebellious mal perforant on one foot in another case healed over in twelve days In a third case the patient refused to allow the intervention—scoffing the possibility of curing an ulcer on the foot by operating on the thigh—and fatal gangrene soon followed.

2: 123-142 (Sept. 5) 1925

*Tropical Ulcer. P. Mangabeira Albernaz—p. 123.
Digestive Leukocytosis. A. L Pimenta Bueno—p. 127.

Treatment of Tropical Ulcer.—Mangabeira Albernaz has been treating tropical ulcer by different methods but found bismuth the most effectual. He used the acid tartrate-bismuthate of potassium and sodium in sixty-four cases, and states that all pain disappeared by the second to the fourth hour and the lesion cleared up promptly while the fusiform bacilli, spirochetes and other germs were reduced to a half in twenty-four hours. One boy aged 6 had six different ulcers; each was given different local treatment. The one treated with bismuth healed much more promptly than the others One man had an extremely painful ulcer on the foot which had resisted all treatment for two years but healed in seven days under five applications of the bismuth.

Medicina Ibera, Madrid

19: 317-344 (Oct. 10) 1925

*The Pyelovenous Reflux. Larrú and Aguilar Sarmiento.—p. 317.
Creatinuria in Tuberculosis. J. Valdés Lambea.—p. 321.

Pyelovenous Reflux.—Larrú and Aguilar Sarmiento conclude from their experiments on animals and on recently extirpated kidneys that it is possible to inject a coutrast suspension directly into the veins of the kidney, without rupture or extravasation, simply by forcing the fluid into the ureter. Conditions in pathologic kidneys favor this reflux, and it is probably the explanation for the mishaps that have been observed with pyelography.

Revista Médica Latino-Americana, Buenos Aires

10: 1181-1294 (Aug.) 1925

*Septal Bradycardia. R. A. Bullrich.—p. 1181.
Study of Galop Rhythm. L. Galindez.—p. 1185.
*Regional Fibro-Angiomatosis. Siffredi and de Rabinovich.—p. 1199.
Therapeutic Restriction of Fluids. Cesar Cardini.—p. 1204.
*Paroxysmal Hemoglobinuria in Child. Marin and Coutts.—p. 1218.
Dermatoses. Amaury Pasqualis Politi.—p. 1221. C'tn.

Excitability of Tawara's Node.—The tracings from a case of septal bradycardia of presumably syphilitic origin showed block of the Keith-Flack node. The occasional auricle waves preceding the ventricle seemed to start in Tawara's node. Under inhalation of amyl nitrite, the pulse increased to 120, but the auricles did not contract.

Regional Episodes of Fibro-Angiomatosis.—Crops of tumors developed and retrogressed without leaving a trace, each crop accompanied by the symptoms of an acute infection. There were never any chills, and the sudden drop of the temperature to normal was not followed by sweating. No treatment displayed any efficacy except perhaps spleen organotherapy, and this effect was transient. The patient was a woman, aged 30.

Paroxysmal Hemoglobinuria.—In the case described, in a boy, aged 4, with signs of congenital syphilis, the paroxysms of hemoglobinuria were preceded by jaundice. There have been no further attacks since a course of treatment for the congenital syphilis.

Revista Médica de Yucatán, Merida

13: 85-108 (Aug.) 1925

*Precocious Menstruation. E. Farfán López.—p. 85.
The Surgeon and the Problems of Workmen's Compensation Cases. D. Couoh Vásquez.—p. 92.
Pellagra and Vitamins. R. Carrancá y Trujillo.—p. 96. C'cn.

Precocious Menstruation.—Farfán López' patient was a child of 9 with signs of old rickets and the lymphatic temperament, mentally and physically backward. She had been having a menstrual flow for a month and the anemia was extreme. The hemorrhages had resisted the usual hemostatics, but were arrested by thyroid treatment. During the three months since apparently physiologic menses have returned at the normal dates. Ten days before each the thyroid treatment was resumed. The general condition has shown marked improvement.

Semana Médica, Buenos Aires

2: 673-740 (Sept. 17) 1925

*Epigastric Hernia. J. R. Goyena.—p. 673.
*Cancer in Female Larynx. H. Zubizarreta.—p. 680.
Traumatic Diaphragmatic Hernia. Olmos et al.—p. 683.
Treatment of Bronchopneumonia. J. Melfi.—p. 687.
Toxic Edema in Liver Disease. Barilari and Hardoy.—p. 706.
*Treatment of Trachoma. Urrets Zavalia.—p. 708.
Relations Between the Semicircular Canals and the Movements of the Eyes in Man. E. Adrogué.—p. 718.
*Labyrinthitis from Traumatism. J. Basavilbaso.—p. 724.

Gastric Disturbance with Epigastric Hernia.—Five years of constipation alternating with diarrhea, pains in the stomach not connected with meals, tenderness in the pylorus region, and signs of overexcitability of the parasympathetic nervous system were all explained by a tender reducible epigastric hernia. Strauss has reported four cases of coexisting epigastric hernia and gastric ulcer. If symptoms persist after surgical correction of the hernia, with apparently normal conditions in the stomach, treatment to soothe the overexcitable vegetative nervous system is called for.

Laryngeal Cancer in Women.—Zubizarreta's experience indicates that cancer in the larynx is less malignant in women than in men. Deep roentgenotherapy has apparently cured completely in his one case in a woman.

Subconjunctival Injections of Copper Sulphate in Treatment of Trachoma.—A 1 per cent. solution with 4 per cent. procain was injected, and 58.3 per cent. of forty-eight patients were cured, and others, to a total of 83 per cent., were more or less improved. Corneal ulcers healed more rapidly than with any other treatment. Nicati's technic was followed.

Diffuse Labyrinthitis from Foreign Body.—The efforts to dislodge a grain of corn in the boy's ear drove it farther in. It was extracted the sixth day by a petromastoid operation, the child having presented symptoms of diffuse labyrinthitis in the interim. The corn was in three pieces; this testified to the force that had been applied in the efforts to extract it, which explained also the pus in the middle ear.

2: 741-820 (Sept. 24) 1925

*Measles. F. J. Liceaga.—p. 741.
Endonasal Dacryorhinostomy. R. Dellepiane Rawson.—p. 776.
History of Medicine in Argentina. J. Túmburus.—p. 778.
Septicemia Treated with Tuberculin. J. B. Galand.—p. 788.
Appendix in Hernia. E. L. Vila and G. F. Nunes.—p. 791.
Summary of Kinetic Plasmogenesis. A. Mary.—p. 809.

Measles.—Liceaga states that the official 23.5 per cent. of mortality from measles in Buenos Aires (1924) is below the reality because the deaths are often credited to the complicating pneumonia or other disease. He comments favorably on vaccine treatment, and advises diphtheria antitoxin with laryngitis in measles, and local measures to abort complications. Fourteen children that had been exposed to measles were injected with convalescent serum and none developed the disease.

Archiv für klinische Chirurgie, Berlin

138: 1-672 (Oct. 20) 1925. Transactions of Surgical Congress

Twenty Years of Transplantation Research. E. Lexer.—p. 251.
Treatment of Acute Occlusion. G. Perthes.—p. 303.
Arterialization of the Blood G. Hotz.—p. 334.
*Persistence of Implanted Thyroid. A. Eiselsberg.—p. 342.
*Early Diagnosis of Tetanus. A. Buzello.—p. 351.
*Functional Tests of the Circulation. S. Frey.—p. 358.
Resorption of Substances in Ischemic Tissue. C. Ritter.—p. 381.
Food and Wound Healing. A. Herrmannsdorfer.—p. 396.
Blood Supply of Stomach. W. Usadel.—p. 401.
The Medical Publications of the Day. F. Sauerbruch.—p. 428.
*Etiology and Treatment of Megacolon. F. Brüning.—p. 435.
*Resection of Colon in Constipation. H. Finsterer.—p. 449.
Kidney Function Test. Pregl.—p. 489. Idem. Haberer.—p. 493.
Acid-Alkali Kidney Function Test. Rehn.—p. 502.
*Denaturing of Alcohol. Perthes.—p. 510.
Treatment of Cleft Palate. Kirschner.—p. 515.
Growth Energy of Implanted Epithelium. H. Kurtzahn.—p. 534.
Extirpation of Pericardium. V. Schmieden.—p. 552.
*Bacteremia After Operations. E. Seifert.—p. 565.
*Healing of Fractures. A. Schubert.—p. 587.
*Surgery of Acute Osteomyelitis. A. Hedri.—p. 596.
*Dislocation of the Radius in Children. R. Bonn.—p. 602.
Pyloromyotomy. E. Payr.—p. 639.

Persistence of Implanted Thyroid.—Twelve years after intra-abdominal implantation of a piece of the thyroid gland, Eiselsberg found a tumor of the structure of an adenoma of the thyroid. The normal tissue of the implant had probably been resorbed, and the adenoma tissue had proliferated.

Early Diagnosis of Tetanus.—Buzello injects a suspension of the wound secretion from the patient, subcutaneously, in white mice or other animals. The initial symptoms of tetanus (unilateral or paraplegic rigidity) are characteristic within twelve to twenty-four hours.

Functional Tests of the Circulation.—Frey recommends Kauffmann's diuresis test in surgical patients.

Etiology and Treatment of Megacolon.—Brüning regards megacolon as a congenital—sometimes inherited—malformation (partial gigantism). It is due to the absence of inhibiting impulses from the vegetative nerves. Some abnormal condition of the vegetative centers of the spinal cord is probable, he says. Mechanical and functional disturbances complete the pathologic development. Resection is the best treatment. He removed in one case 216 cm. of the large intestine.

Resection of Colon in Constipation.—Finsterer has resected the colon in thirty-six cases of chronic constipation. The first cases were operated on because of a volvulus. He prefers resection of the left half of the colon—even in the so-called ascending type of constipation He recommends the method not only in elongation of the colon, but also in spastic constipation, when it resists other treatment and causes pains

Denaturing of Alcohol.—Perthes found that all the compounds allowed in Germany for denaturing of alcohol make it unsuitable for surgical disinfection of the hands. He offered a resolution to appeal to the authorities to allow the use of the Swiss method (addition of 1 5 per cent. of acetone). The motion was carried.

Bacteremia After Operations.—Seifert reports on the frequency of bacteremia after surgical interventions. It occurred after nine out of his forty-three appendicitis operations Although it has not much practical importance, it would be better to prevent it by cautious manipulation and, perhaps, by blocking the focus

Healing of Fractures.—Schubert found that crushing of the bone is followed by a more rapid new formation of bone and consolidation than a simple fracture. This is due to the stronger proliferation of capillaries in the former case

Surgery of Acute Osteomyelitis.—Hedri found lipuria in the grave cases of human and experimental osteomyelitis. Only these cases need immediate opening of the bone Incision of the subperiosteal abscess is sufficient in the others.

Dislocation of the Radius in Children.—Bonn found no excessive growth in length of the radius in cases in which there had been untreated dislocation of this bone in childhood. With a rupture of the annular ligament, necrosis of bone occurs Yet this does not entail a deforming arthritis - probably because of the absence of pressure on the joint.

Deutsche medizinische Wochenschrift, Berlin

51: 1767-1806 (Oct 23) 1925

Biologic Problems H Much —p 1767.
*Weichbrodt's Bichlorid Reaction H A Krebs —p **1771.**
Basal Cell Cancers H Fenz —p 1773
*Shock Treatment in Gallbladder Disease Hinrichsen —p **1774.**
Leukocytosis and Constitution. C Moewes —p 1776
Treatment of Arsphenamin Injuries F Dietel —p 1778.
Goiter in Northern Germany E Lick —p 1779
Vascular Reactions in the Eye W. Dieter —p 1781.
Meinicke Microtest. H Martin —p 1782
Cisterna Puncture E Osann —p 1783
Pigmentation in Typhoid M Winkel —p 1784
Roentgenography of Apices R Gassul —p 1784.
Werlhof's Disease. Buchert —p. 1785
Infection Erythema in Woman. G Stratmann —p. 1785.
Dislocation of Vertebra in Version and Extraction E Harloff —p 1786
Calcium Metabolism After Pituitary Extract Diesing —p 1787
Recovery from Landry's Paralysis Levinson —p 1787
Acute Alcohol Poisoning in Child H Kaufmann —p 1788
External Factors in Shape of Skull A Basler —p 1788 C'cn, p 1827.
Morbidity Statistics in U S Prinzing —p 1788 C'cn
Selection of Patients for Sanatoriums J Ritter —p 1791
Complications of Otitis. L Joseph —p 1805 C'cn, p 1844

Weichbrodt's Bichlorid Reaction.—Krebs found that the maximum of precipitation of globulins in the cerebrospinal fluid with Weichbrodt's method (mercuric chlorid) occurs at a concentration of 0 25 per cent albumin

Shock Treatment in Gallbladder Disease.—Hinrichsen found that intravenous injections of foreign proteins may cause the appearance of urobilin in urine independently of a cholecystitis. Its amount does not always increase after these injections in the latter disease

51: 1807 1850 (Oct 30) 1925

*Epidemiologic Research C Prausnitz —p 1807.
Colon Bacillus Treatment A Nissle —p 1809
The Brain in Paralysis Agitans K Kleist —p 1813. C'cn.
Treatment of Adnexitis W Flaskamp —p 1815
*The Fluid from Induced Blisters in Syphilitic Infants M Soldin and F Lesser —p 1817.
Pruriginous Eczema in Polycythemia and Asthma Werther.—p 1819
Sanocrysin in Experimental Tuberculosis of the Eye Krusius —p 1821
Preservation of Culture Media F v Kováts —p. 1822.
Staining of Elastic Fibers E A Schubenko Schubin —p 1823
Bronchial Cysts J Preuss —p 1823.
Blood Diseases. W. Steinbrinck.—p 1824
Treatment of Arsphenamin Injury. R. Deussing —p **1824.**
Calculosis After Prostatectomy. W. Paetzel —p. 1825.
*Dermatitis from Match Box Swars —p 1826
Birth Control Congress in New York Rohleder.—p. 1828.
Automobile Privileges of Physicians. E Dochnahl.—p. 1829.

Epidemiologic Research.—Prausnitz deals with Wolter's attempt to revive Pettenkofer's theory. He admits that the present knowledge of epidemiology is not complete. Nevertheless much has been cleared up, and for the rest he prefers the theory of changes of virulence of the germs.

"Reizserum" from Syphilitic Infants.—Soldin and Lesser produced by cantharidin blisters in infants. They found spirochetes whenever there were cutaneous manifestations of syphilis This was valuable in cases with a negative Wassermann test. Mercuric chlorid and potassium permanganate killed the spirochetes. Addition of a Wassermann positive serum or of a serum taken immediately after injection of arsphenamin had no influence. No spirochetes were found in new blisters after injection of arsphenamin in the children although those remaining in old blisters were not injured.

Klinische Wochenschrift, Berlin

4: 2089 2136 (Oct. 29) 1925

Sensibility of the Abdominal Cavity. M. Kappis.—p 2089. C'cn.
*Action of Proteins on Ketonuria. Thannhauser and Markowicz.—p. 2093.
Inhalation Apparatus W. Heubner.—p. 2099.
*Acroparesthesias E Straus and E. Guttmann —p. 2102.
Scurvy in Guinea Pigs K Schmitt —p 2104
*Endocrine Glands in Pernicious Anemia. A. Mendershausen —p. 2105
Antiphlogistic Action of Calcium E Lehner.—p 2106
The Sachs Klopstock Reaction M. Osann —p. 2108.
Heart and High Altitudes S. Hediger —p 2109.
*The Interbrain in Pemphigus. A. Buschke and H. Ollendorff.—p. 2113.
*Gas Metabolism in Exophthalmic Goiter Pollitzer and Stolz —p. 2114.
*Insulin and Tar Cancer. H D. v Witzleben —p. 2115.
Poisoning by Black Radish C Bachem —p. 2115.
Phthisis and Climate A Walder —p 2116
Abortions from Standpoint of National Welfare. Engelsmann.—p 2118
Vital Statistics from Medical Standpoint K Freudenberg.—p. 2135.

Action of Proteins on Ketonuria.—Thannhauser and Markowicz administered various amino-acids to patients with grave diabetes. Even leucin, phenylalalin and tyrosin did not increase the ketonuria on low caloric diets. The influence was, however, distinct with diets high in calories. They believe that proteins are ketonogenous only in proportion to their content in these amino-acids Yet since the rest of the protein is converted into sugar, the patient catabolizes the proteins and fat of his body, which raises the ketonuria indirectly. They find that the formation of acetone bodies is evidence of disturbed oxidation of sugar as the primary change in diabetes The oxidation of sugar in the muscles does not disprove this It is an entirely different process from the oxidation in the liver The glycogen in the muscles, or at least its synthesis and cleavage, may also be different. The disturbance of the utilization of sugar is localized in the liver, and entails consecutive disturbances of the utilization of proteins and fats.

Acroparesthesias. — Straus and Guttmann divide their eighty-seven cases of acroparesthesia into two groups: One occurs in individuals between 20-40 years of age and is connected with vasomotor symptoms (cyanosis, white color or edema of fingers). This group is a vasoneurosis. The other type resembles tetany pathogenetically; occurs in the menopause, and presents an exaggerated electric and mechanical irritability of the nerves. Vasomotor symptoms do not occur here

Endocrine Glands in Pernicious Anemia.—Mendershausen found the pituitary, pancreas, suprarenals and gonads practically normal in his thirteen cases of pernicious anemia. He found, however, in twelve of them changes in the thyroid gland (lymphocytic infiltrations with atrophy, occasionally increase in colloid).

The Interbrain in Pemphigus.—Buschke and Ollendorff report a case of pemphigus in which Bielschowsky found hyperemia and grave cellular changes in the nucleus paraventricularis

Gas Metabolism in Exophthalmic Goiter.—Pollitzer and Stolz found that the product of the basal metabolism and percental increase of metabolism after intake of proteins (specific dynamic action) is a constant in normal conditions and in those cases of increased basal metabolism in which the increase is due to changes of central regulation (fever and asthma). This means that an increased basal metabolism causes a lowering of the specific dynamic action. Calculated on a basal consumption of 3 to 4 c.c. of oxygen per kilogram and of a specific dynamic increase of 16 per cent., the constant ("gas metabolism index") would range from zero to 70. It is normal in simple goiter with toxic symptoms, and increased up to 200 in the classical exophthalmic goiter, progressive iodin poisoning and iodin hyperthyroidism. Iodin therapy is contraindicated in the first group. Besides this it is contraindicated in patients who have a high index due only to an excessive specific dynamic action (30 per cent.) in spite of a low basal metabolism. On the other hand, it is indicated in the second group and with nodular goiters which have lost their colloid, in spite of a low index.

Insulin and Tar Cancer.—Witzleben tarred three groups of four rabbits. The small wartlike precancer lesions appeared in five weeks in the first (control) group; in nineteen days in the second (injected with epinephrin and glucose), and so far not at all in the third group, injected with insulin.

Medizinische Klinik, Berlin

21: 1635-1672 (Oct. 30) 1925

*Hygiene of the Ear. E. Ruttin.—p. 1635.
*Pneumococcus Peritonitis. G. Wolfsohn.—p. 1638.
*Agranulocytosis. W. Schultz and L. Jacobowitz.—p. 1642.
*Choleresis and the Blood. O. A. Rösler.—p. 1645.
*Birth Injury. A. Wiechers.—p. 1646.
Epidermolysis Bullosa. R. Menzel.—p. 1648.
Hospitalism in Infants. L. Bytsch.—p. 1652.
Cytology of Cerebrospinal Fluid. H. Krey.—p. 1655.
Review on Social Hygiene. Roeder.—p. 1657.
Epidemics in 1924. B. Möllers.—p. 1670.

Hygiene of the Ear.—Ruttin warns against cleaning of the meatus with swab and water. It only increases the amount of cerumen. The cleaning or scratching of the ear with hair pins or matches causes eczema and furunculosis. A kiss on the ear easily ruptures the drum-head, as also a slap on the ear. Cotton soaked in oil should be applied before swimming, especially in persons with perforation of the drum-head. The oil soaked pledget prevents infection as well as rupture of the membrane in diving. The infections of the middle ear, due to blowing the nose with both sides closed, are frequent. Noise is an important factor in disease of the internal ear. He observed two deafmute children with no other cause for the deafmutism except the noise of their father's smith-shop, where they were kept during the day, while they were infants. The younger the start in such noisy industries, the graver the injury to the ear. The parenchymatous keratitis beginning at the age of 10-14 in congenitally syphilitic children is usually followed within a year or two by the affection of the internal ear.

Pneumococcus Peritonitis.—Wolfsohn observed seven cases of pneumococcus peritonitis. The condition is usually attributed to appendicitis. Early operation is frequently fatal; the prognosis with late operation is good. Application of ether after lavage of the peritoneum can be recommended.

Agranulocytosis.—Schultz and Jacobowitz have encountered to date ten cases of agranulocytic angina, and regard only thirteen other cases from the literature as belonging in this category. They emphasize the absence of a hemorrhagic diathesis and of thrombopenia, and the practically normal erythropoiesis. They believe in a primary injury of the leukomyeloid apparatus.

Choleresis and the Blood.—Rösler counted the blood for four hours after intravenous injections of a sodium salt of phenylcinchoninic acid in twenty five patients with jaundice. He found a marked lowering of the erythrocytes and increase in leukocytes, especially the neutrophils. He believes that an increased destruction of erythrocytes took place.

Birth Injury.—Wiechers shows that the majority of infants who die in the first days have grave injuries of the brain. The favorite clinical diagnosis in these cases was "premature" or "congenital debility." The same injury causes death in the second two weeks of life, the favorite diagnosis then being atrophy, purulent bronchitis, pneumonia or malnutrition.

Münchener medizinische Wochenschrift, Munich

72: 1863-1906 (Oct. 30) 1925

Biology of Tuberculosis. A. Jesionek.—p. 1863. C'en, p. 1921.
*Skin Reactions to Rays. G. Schwarz.—p. 1867.
Iodin and Blood Pressure. Engelen.—p. 1869.
Pneumothorax. F. Serio.—p. 1870.
"Duodenal Pylorus Reflex." F. Rabe.—p. 1872.
*Advantage of Colon Bacilli in Intestine. O. Loew.—p. 1873.
*Bone Changes in Spastic Paralysis. C. Rohde.—p. 1874.
Sedimentation Test in Lead Poisoning. Schnitter and Paris.—p. 1876.
*Potassium Treatment of Retention of Urine. H. Reimer.—p. 1876.
Physical Examination of Students. R. Jung.—p. 1877.
Dosage in Homeopathy and in Regular Medicine. R. Meissner.—p. 1882.
*Sympathectomy in Bronchial Asthma. M. Rehbein.—p. 1885.
The Schede-Habermann Artificial Leg. Pürckhauer.—p. 1885.
The Teeth in Congenital Syphilis. H. Fabian.—p. 1886
Strangulation of Finger and Penis by Long Hair. Grosse.—p. 1887.
*"Epidemics, Soil and Climate" E. Schilcher.—p. 1888.
*History of Phrenicotomy. D. Hellin.—p. 1888.
"Intensity of Therapeutic Light." H. Bach.—p. 1889.
The Spiritual War Against Germany. Rimpau.—p. 1889.
Curiosa from an Old Medical Book. Doll.—p. 1890.

Skin Reactions to Rays.—Schwarz found that the secondary latency period is not limited to erythemas due to the action of ultraviolet or roentgen rays. He found the same phenomenon after application of mustard oil on the skin, the only difference being in the speed: hours in mustard oil dermatitis and weeks after the roentgen rays. There is also an analogy in the Pirquet test. He believes that these reactions are manifestations of a tissue allergy.

Advantage of Colon Bacilli in Intestine.—Loew points out that colon bacilli are capable of converting ammonia into proteins, and thus protect the organism against the ammonia.

Bone Changes in Spastic Paralysis.—Rohde found in six of his seven grave cases of Little's disease changes in the bones (three cases) or in the joints. He explains the former by new formation of bone where the contracted muscles have a broad and well vascularized attachment to the periosteum and bone.

Potassium Treatment of Retention of Urine.—Reimer had further good results in postoperative retention of urine. He administers 1-2 tablespoonfuls of a solution of 60 gm. of potassium acetate in 300 gm. of water. In obstinate cases he adds one spoonful every half hour. In 150 cases this treatment proved successful in 64 per cent. (50 per cent. in women; 70 per cent. in men). The remedy is of no use with motor insufficiency of the stomach.

Sympathectomy in Bronchial Asthma.—Rehbein expects success with sympathectomy in those patients with bronchial asthma who experience relief when the cervical ganglions are anesthetized. He found a tenderness in that region in such cases.

"Epidemics, Soil and Climate."—Schilcher traces the epidemic of influenza in Finland exclusively to a shipload of Bavarian soldiers who arrived there in June, 1918.

History of Phrenicotomy.—Hellin claims priority in having demonstrated the futility of phrenicotomy in treatment of pulmonary tuberculosis, as made by Sauerbruch.

Wiener klinische Wochenschrift, Vienna

38: 1151-1176 (Oct. 22) 1925

*The Vienna Water Problem. R. Grassberger.—p. 1151.
*Diabetic Glycosuria. H. Schur and F. Kornfeld.—p. 1153.
*Professional Disease and Injury by Electricity. Jellinek.—p. 1155.
Raising the Prematurely Born. E. Stransky.—p. 1157.
*Conjugal and Syphilitic Exophthalmic Goiter. J. Koopman.—p. 1159.
Embolic Bismuth Injury. M. Wolf.—p. 1160.
"Glucose Value of Food." W. Falta.—p. 1161.
Public Demonstrations of Hypnosis, etc. Wagner-Jauregg.—p. 1163.
Treatment of Itching Dermatoses. G. Nobl. Supplement.—pp. 1-24.

Vienna Water Problems.—Grassberger describes the so far unsuccessful fight of the Hygienic Institute of Vienna and of the public health service against the intended endangering of the purity of the water supply. The chief expert of the opposing party is a geologist whose ignorance and superstitious delusions (divining rod) were shown up in flagranti by the author nine years ago.

Diabetic Glycosuria.—Schur and Kornfeld found that the glycosuria occurs with low blood sugar in true diabetes. They attribute the absence of sugar in the normal urine to its complete oxidation in the kidney. They believe that it appears in the urine in diabetes because the kidney is unable to use it.

Professional Disease and Injury by Electricity.—Jellinek points out that most of the persons seemingly killed by electric currents can be successfully revived. Yet the artificial respiration is frequently done in a way which kills the injured (aspiration of gastric contents in lungs). Electric wounds heal surprisingly well and radical surgery is contraindicated.

Conjugal and Syphilitic Exophthalmic Goiter.—Koopman emphasizes the necessity to think of a syphilitic etiology in exophthalmic goiter. Iodids have a surprising effect in these cases.

38: 1177-1200 (Oct. 29) 1925

*Action of Diuretics on the Tissues. P. Wermer and E. Zak.—p. 1177.
*Viability of Tubercle Bacilli. F. Passini.—p. 1182.
Necrosis of Scalp from Constriction at Birth. H. Heidler.—p. 1184.
*Anaphylaxis to Echinococci. J. H. Botteri.—p. 1186.
Insulin and the Leukocyte Count. G. Torok.—p. 1187.
"Cancer Problems." Warburg.—p. 1188. Idem. Bauer and Nyiri.—p. 1188.
Chemotherapy of Tuberculosis of the Skin. G. Nobl.—p. 1190.
Treatment of Goiter, Hyperthyrosis and Exophthalmic Goiter. N. Jagić. Supplement, pp. 1-12.

Action of Diuretics on the Tissues.—Wermer and Zak injected sodium iodid intravenously or subcutaneously. It appeared in the saliva in both instances earlier in women than in men. They confirm Ameuille and Sourdel's observation on the delayed appearance in the saliva in nephritis. Diuretics (theobromin group, urea, novasurol) caused also a more rapid elimination by the saliva. They conclude that these drugs induce a more rapid circulation of the tissue fluid.

Viability of Tubercle Bacilli.—Passini cultivated tubercle bacilli together with *Bacillus putrificus Bienstock*. The tubercle bacilli were killed within nine days.

Anaphylaxis to Echinococci.—Botteri confirms the reliability of tests made with fluid from echinococcus cysts to obtain cutaneous reactions.

Zentralblatt für Chirurgie, Leipzig

52: 2466-2512 (Oct. 31) 1925

Prolonged Intravenous Infusion. E. Eick.—p. 2466.
*Treatment of Soil Infected Wounds. O. Acklin.—p. 2470.
Primary Intestinal Cellulitis. E. Metge.—p. 2474.
Blood Transfusion. O. Jüngling.—p. 2475.
Surgery of Tumors of Esophagus. A. Melnikoff.—p. 2479.
Treatment of Varicocele. F. Franke.—p. 2483.

Treatment of Wounds Infected by Earth.—Acklin infected guinea-pigs with earth containing spores of tetanus bacilli. The animals recovered if he introduced at the same time animal charcoal or colloidal aluminum hydroxid.

Zentralblatt für Gynäkologie, Leipzig

49: 2385-2448 (Oct. 24) 1925

*Mechanism of Menstrual Bleeding. H. Hinselmann.—p. 2386.
The Pseudohermaphrodite Question. Hoepke and Oettingen.—p. 2388.
Cervical Tears in Spontaneous Delivery. A. Hermstein.—p. 2401.
*Sterilization by Double Vagina. P. Haendly.—p. 2404.
Early Sign of Pregnancy. F. Lönne.—p. 2406.
Hydrops of Fetus and Placenta. C. Becker.—p. 2409.
Gymnastics for Women. W. Wiegels.—p. 2412.

Mechanism of Menstrual Bleeding.—Hinselmann observed under the magnifying glass a rhythmic expulsion of the blood from the menstruating uterus. For instance, in the first hour of the first day he counted within a thousand seconds 12.6 expulsions, representing a total period of twenty-seven and two-tenths seconds.

Sterilization by Construction of Double Vagina.—Haendly recommends to form a very narrow anterior tunnel communicating with the uterus, and a broad blind posterior portion of the vagina, serving for coitus, without any communication with the uterus.

49: 2449-2512 (Oct. 31) 1925

*Thyroid Function in Dysmenorrhea. W. Schmitt.—p. 2449.
Hematomas of Vulva and Vagina. H. Krause.—p. 2465.
Unusual Case of Chorio-Epithelioma. H. Schimmel.—p. 2469.
*Ileus in Pregnancy and Labor. A. Abrahamsen.—p. 2476.
Temporary Roentgen-Ray Sterilization. H. Behrendt.—p. 2488.

Thyroid Function in Dysmenorrhea.—Schmitt found among forty cases of dysmenorrhea twenty-two with increased and seven with decreased basal metabolism.

Ileus in Pregnancy and Labor.—Abrahamsen's case shows that ileus late in pregnancy may be due simply to pressure of the uterus on the intestine.

Časopis lékařů českých, Prague

64: *1537-1572 (Oct. 24) 1925*

Hypnosis and Crime. F. Berka.—p. 1537.
*Roentgen Study of Ileocecal Region. R. Nekula and J. Šimon.—p. 1540
Signs of Full-Term Fetus. V. Rubeška and V. Káš.—p. 1544.
*Resection of Liver in Cancer. Haim.—p. 1550.
*Influence of Iodin on Rats. I. Mačela.—p. 1551.
*An Insulin Which Does Not Cause Spasms. I. Mačela.—p. 1553.
Weakness of the Retina. M. Remeš.—p. 1556.
Biologic Testing of Arsphenamin. A. Mládek.—p. 1560.

Roentgen-Ray Study of Ileocecal Region.—Nekula and Šimon studied more than 100 patients with disturbances in the ileocecal region. The appendix had been removed in twenty of them, yet the distress was not diminished. They found a slow evacuation of the cecum in perityphlitis. Twenty-four hours and longer after the ingestion of a contrast meal the lower part of the cecum was still filled. A spasm of a cecocolonic muscular ring was observed several times. Atropin relieved the stagnation in these cases. A motor insufficiency of the distal part of the ileum may cause gaping of the ileocecal valve. Organic processes such as adhesions and abscess can be studied roentgenologically. A filling of the appendix speaks for chronic appendicitis only if the appendix is tender on pressure. If conservative treatment fails, they recommend appendectomy, severing adhesions and eventually fixation of the hepatic flexure. Fixation of the cecum would only aggravate the condition, if the hepatic flexure were still free or displaced downward.

Resection of Liver in Cancer.—Haim resected successfully a lobe of the liver infiltrated by a cancer of the gallbladder. He emphasizes that metastasis involving only one lobe of the liver does not contraindicate a radical operation on a cancer of the gastro-intestinal tract.

Influence of Iodin on Rats.—Mačela added 0.2 mg. of sodium iodid daily to the food of young rats. They gained in weight faster than the controls, and showed a rapid sexual development.

An Insulin Which Does Not Cause Spasms.—Mačela obtained by a modification of the Dodds and Dickens method a fraction of insulin which lowers the glycemia extremely but does not cause convulsions.

Acta Medica Scandinavica, Stockholm

62: 379-580 (Oct. 24) 1925

*Cancer and Diet. M. Hindhede.—p. 379.
Glycosuria with Meningeal Hemorrhage. L. Nicolaysen.—p. 392.
"Terrace" Pneumothorax Effusions. G. Edström.—p. 395.
Tumor of Fifth Cervical Segment of Cord. N. Ahlen.—p. 400.
Dosage of Sanocrysin. K. Lebotay.—p. 424.
Multiple Tumors in Muscles. F. Sundelin.—p. 442.
Tonic Labyrinth-Eye Reflexes. R. Lorente De No.—p. 461.
Hemorrhage Diatheses. H. Becks.—p. 474.
Syphilis and Paroxysmal Hemoglobinuria. E. B. Salén.—p. 521.
*Wassermann Reaction in Paroxysmal Hemoglobinuria. Salén.—p. 558.

Cancer and Diet.—Hindhede was struck by the high incidence of cancer in Denmark (151 deaths per hundred thousand inhabitants in 1915). Fully 17 per cent. of the persons who have completed their forty-fifth year die of cancer in Denmark. He attributes this to the excellent and more than sufficient food which prevails there. The English farm laborers, with their low protein fare, have a very low death rate from cancer. That of physicians is much higher. He believes that irritation of the digestive tract by decayed, strongly salted and spiced food, alcohol, tobacco, overeating and a food rich in animal protein are the main causes of cancer.

Wassermann Reaction in Paroxysmal Hemoglobinuria.—Salén found that the hemolytic amboceptor causing the Donath-Landsteiner reaction is of no influence on the Wassermann reaction in paroxysmal hemoglobinuria.

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END-RESULTS OF OPERATION FOR CORRECTION OF DROP-FOOT *

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MEMPHIS, TENN.

Drop-foot is the inability to dorsiflex the ankle joint or foot, and is the result of any agent that impairs or abolishes the muscular power in the anterior group of leg muscles. The etiologic factors are: destructive changes in the muscles and tendons, toxic neuritis, as in lead poisoning, trauma to the external popliteal nerve, spastic paralysis and, most frequently, poliomyelitis, or infantile paralysis. Drop-foot may be simple, when only the anterior muscles of the leg are involved, or it may be associated with varus, valgus or flail-foot, if loss of muscle power is more extensive. As the anterior muscles of the leg are more frequently paralyzed than any other muscle group as a sequela of poliomyelitis, inability to dorsiflex the foot is a very common disability.

In June, 1923, I [1] described before the American Orthopedic Association a surgical operation for the correction of drop-foot in connection with other procedures in which drop-foot is associated with lateral deformities, as varus or valgus. At this time, the method had been employed in twenty-four cases, and only eleven months had elapsed since the first operation; in consequence, definite conclusions could not be reached, but from the evidence offered by roentgenologic and clinical manifestations there was no doubt that the purpose had been accomplished in a limited number of cases. Since the preliminary report, the technic, as originally defined, has been used in 119 cases, making a total of 135, and approximately three years has elapsed since the first operation. In consequence, sufficient evidence has been acquired to determine the real value of the new method.

All operative procedures, with the exception of the one under discussion, attempt to suspend the foot from the anterior aspect of the leg by silk cords, paralyzed tendons, transplanted fascia lata, etc., but the result of such methods is uncertain and often disappointing, as the constant force of gravity by the pendulous foot causes elongation of the improvised ligaments, with recurrence. It has become so universally recognized as to be an axiom that paralyzed tendons will not permit stress. In 1920, the American Orthopedic Association appointed a committee to investigate the various surgical procedures commonly employed in the treatment of paralytic feet. This committee, after a most painstaking, scientific and impartial investigation of the results, demonstrated in a majority of large orthopedic clinics of America, filed its comprehensive report before the association in June, 1921, in which it stated regarding drop-foot: "None of the operative methods considered can be confidently recommended as a standard procedure." After considerable experience and observation of results in other clinics, I reached the same conclusion; in consequence, I instituted a careful investigation to find a more dependable method. This culminated in devising the procedure described below. The entire object of this operation is to construct a stop joint, by transplanting or building up a mass of bone on the superior surface of the os calcis, thus forming a permanent bony process limiting plantar flexion by impingement on the posterior surface of the tibia. The technic is as follows:

The skin incision is made over the Achilles tendon, if this structure is contracted; otherwise to the outer or inner side, as convenient. It should extend from the superior aspect of the tuberosity of the os calcis upward for three or four inches in a straight line. If the Achilles tendon is contracted, a severance is made by the Z plastic method. A straight incision is next made in the midline to the posterior portion of the ankle joint, retracting inward the tendon of the flexor longus pollicis. With a heavy periosteal elevator, a pyramidal space is cleared, exposing the posterior surface of the tibia, ankle joint, subastragalar joint and superior surface of the os calcis. The foot is dorsiflexed, bringing into view the posterior extremity of the astragalus, which is removed for from one-half to three-fourths inch. A wedge-shaped cavity is excavated on the os calcis, below the posterior extremity of the astragalus and the posterior portion of the articular surface of the tibia. Bone is next transplanted from any portion of the skeleton. As it is usually necessary to enter the forefoot for the purpose of stabilization by arthrodesis, bone is often excised in the process, and can be utilized as transplants. Spongy bone is believed more naturally to adapt itself than dense bone from the tibia, though a tibial transplant was successfully employed in one case and has been recently advocated by Leo Meyer. Transplants from the femur, when the case is complicated by genu valgum, and from the ilium, in transferring the crest in hip flexion contractures, have proved efficient. If bone is excised from the forefoot, it is denuded of cartilage, and a large piece about one-half by one inch in diameter is selected and placed in the cavity prepared on the superior surface of the os calcis, about which small particles are arranged in a pyramid. The cartilage removed is placed in mosaic fashion to cover the posterior, inner and outer aspects of the pyramid, to prevent adhesion to surrounding structures; this step, however, is by no means essential, as

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* Read before the Section on Orthopedic Surgery at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] Campbell, W. C.: Operation for Correction of Drop-Foot, J. Bone and Joint Surgery 5: 815-825 (Oct.) 1923.

the results are as good when bone is obtained elsewhere, free of cartilage. The soft parts are sutured snugly to retain the transplants in situ, the Achilles tendon is united, if severance is required, and the fascia and skin are closed. The foot is then held by a plaster cast at an angle of 90 degrees with the leg. Overcorrection is especially avoided, as it is preferable to secure a slight degree of plantar flexion, in order to avoid flat sole or heel walking. At the end of eight weeks, the cast is removed and a roentgenogram made, which usually demonstrates proliferation. A sequence of roentgenograms exhibits a gradual organization of bone, until there is a solid mass continuous with and forming a part of the os calcis and often fusing the os calcis to the astragalus, stabilizing the subastragalar joint. Plantar flexion is thus prevented, as the olecranon process limits extension of the normal elbow. The technic may be modified, when the forefoot is stable, by turning forward the upper third of the os calcis, when, incidentally, it is possible to do a subastragalar arthrodesis, or even the horizontal section of Davis, with backward displacement of the foot by the posterior route. It is also possible to transfer particles of bone from the midtarsal region through the subastragalar joint to the superior surface of the os calcis, in performing a triple arthrodesis, but the block cannot be so accurately placed as when the posterior incision is employed.

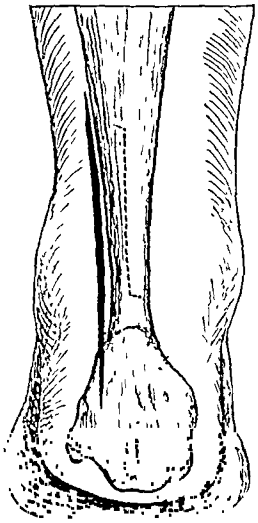
Fig. 1.—Skin incision for bone block operation.

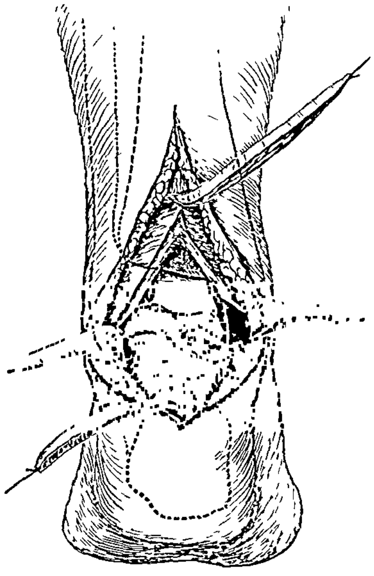
Fig. 2.—Pyramidal space showing superior surface of the os calcis and posterior aspect of ankle joint.

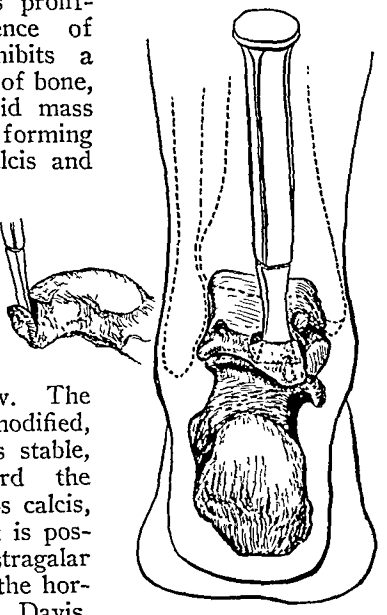
Fig. 3. — Large piece of bone selected to be placed on upper surface of os calcis.

Great care must be taken to place and to retain the bone block approximate to the ankle joint and the posterior surface of the tibia. Displacement is avoided by an apparatus that prevents plantar flexion. Consolidation is usually complete by the end of six months, when the apparatus may be discarded.

The scope of the procedure is apparently not fully appreciated, though it was mentioned in the first report. The operation is not alone employed in simple drop-foot, but whenever drop-foot is associated with other paralytic deformities. The indications are as follows:

1. Simple drop-foot, as a result of paralysis of the anterior group. The midtarsal joint is usually abnormally lax and requires stabilization, which necessitates the excision of bone that may be utilized as transplants.

2. Partial drop-foot, as evidenced by from 25 to 50 per cent. of normal power, but not sufficient to dorsiflex normally. If the midtarsal joint is stable, the bone block may be accomplished by turning forward a flap from the os calcis.

3. Rigid equinus. In this condition, the anterior group is partially, if not totally, paralyzed. Permanent limitation of plantar flexion prevents strain and increases endurance.

4. Equinovarus. The varus is corrected by tarsectomy, when sufficient bone is obtained for transference.

5. Equinovalgus. In this condition, with paralysis of the anterior muscles, a tarsal resection is often indicated, and from it sufficient bone for transference is available.

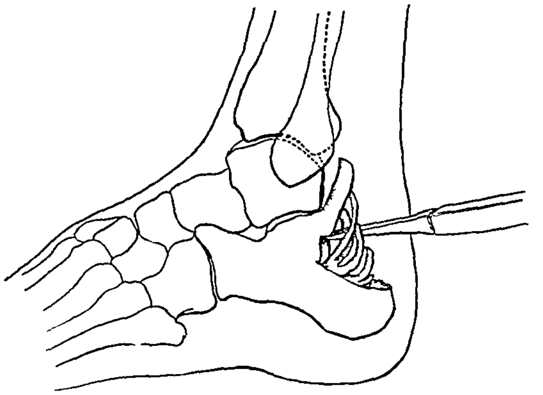
Fig. 4.—Diagram, side view, showing bone block in position approximate to and within ankle joint.

6. Flail-foot. As an addition to the Davis, Dunn, Ryerson or Hoke procedures, the transplant described above makes certain perfect stabilization. Backward displacement of the foot at the subastragalar joint will limit plantar flexion at times, but is not dependable.

7. As an adjunct of various combinations of tendon transference, especially the reattachment of the extensor longus digitorum to the tarsal region.

8. Spastic paralysis, or hemiplegia, with overactive heel cord. In such conditions, recurrence of deformities are notably frequent.

9. In children over 8 years of age. Prior to this time, stabilization operations are rarely indicated.

In fact, it is quite apparent that the procedure has been of value in practically all paralytic deformities of the feet with the exception of cavus, calcaneus and calcaneovalgus. The advantages of the operation are:

1. It has simplicity, as the transplants are usually available from associated procedures.

2. Apparatus may be discarded, as an internal brace is constructed.

3. Muscle power is conserved, by preventing the constant pull of the pendulous foot by gravity.

4. Constant prevention of overstretching may of itself induce a return of dormant muscle power.

5. As functional demands are decreased, feeble power may be cultivated.

6. Rocker motion of the ankle joint is conserved.

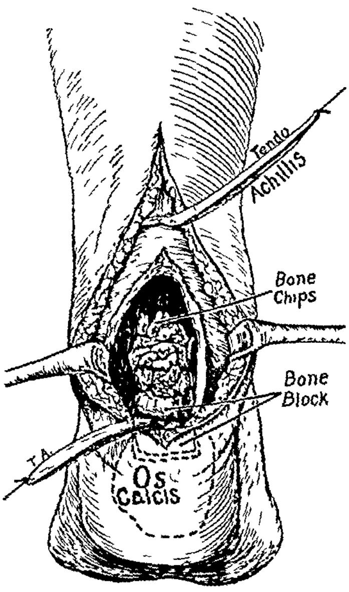

Fig 5.—Modification, which has proved satisfactory in a number of cases, by simply turning up a large flap from the os calcis

The operation has been employed in 135 cases, in 100 of which sufficient time has elapsed to determine permanent results; but no evidence, unless acquired by examination of my colleagues or myself and corroborated by the roentgenogram, is considered worthy of submission. I was so fortunate as to make a survey of sixty-two cases, in which from six months to three years had elapsed since operation. Of the sixty-two patients who presented themselves, there were fifty-eight in whom plantar flexion was satisfactorily restricted by a definite impingement of bone. In four cases, the disability relapsed and these are classed as failures. Of the sixty-two, forty-three were above the age of 14, with only one failure. Nineteen were children below the age of 14 and above the age of 7, with three failures. More time must elapse to determine the effect of growth on the relation of the new osseous process to the ankle joint, but up to the present there has been no evidence of change in position or dissolution, when the end-result was mechanically efficient and was so confirmed by the roentgenogram. However, there is abundant evidence of permanent blocking of joints by fractures occurring in early life.

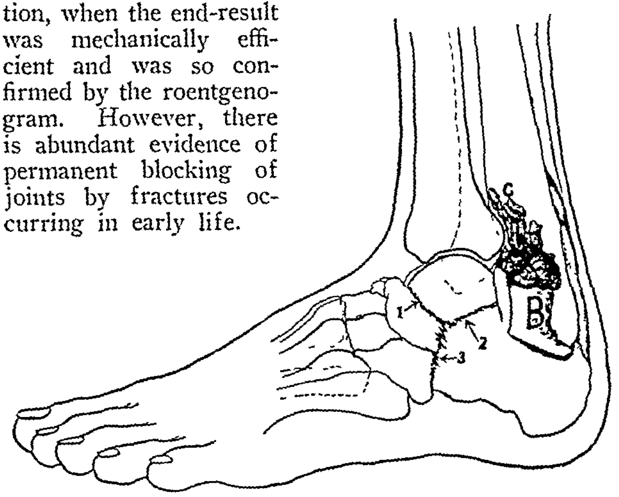

Fig 6.—*B*, bone block; *C*, bone chips, 1, astragaloscaphoid arthrodesis; 2, subastragalar arthrodesis; 3, calcaneocuboid arthrodesis.

In all patients above the age of 14 in whom the result was demonstrated as satisfactory at the end of six months, there can be no question as to permanence. Of the four recurrences, there was absorption of the transplanted bone in one child, while three are attributed to errors in technic, which the roentgenogram clearly demonstrates was caused by failure to place or retain the multiple grafts approximate to the posterior aspect of the tibia and ankle joint.

Persistent pain on walking occurred in two cases; this was probably caused by the transplanting of an excessive amount of bone, but required no treatment, as there is a condensation with contracture as organization is instituted. Should pain persist, a portion of the new process could be removed. One patient complained of sudden pain with swelling; in his case the roentgenogram demonstrated a fracture of the tip of the new process, but recovery was uneventful, without treatment.

There is no intention to convey the impression that the operation is a panacea for all paralytic feet. Many factors, which must be duly considered, are involved in selecting suitable procedures for individual cases. However, the bone block operation to control drop-foot can be recommended with impunity as a dependable surgical procedure which has stood the test of time and from which satisfactory results may be expected in a high percentage of cases, if the original technic is closely followed.

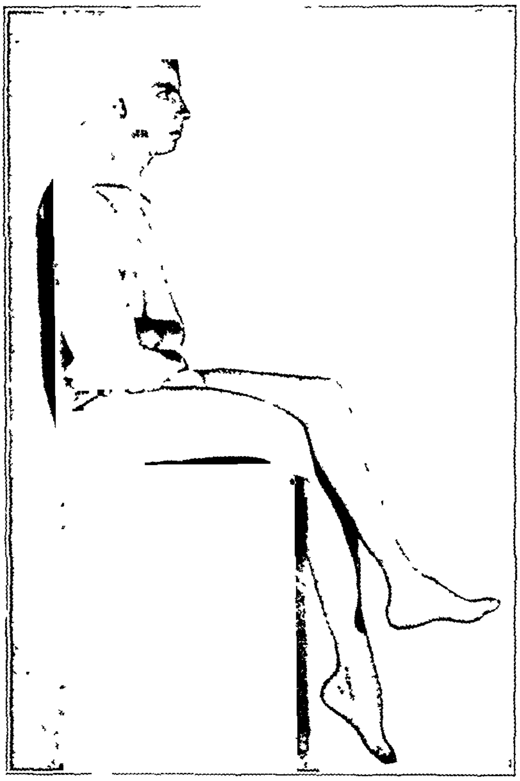

Fig 7.—Satisfactory bone block one year after operation in boy, aged 16. The bone block should be compared with the left foot in extreme plantar flexion.

869 Madison Avenue.

ABSTRACT OF DISCUSSION

Dr. M S Henderson, Rochester, Minn.: I have followed Dr. Campbell's operation from the first. I had the opportunity of seeing a number of these cases and noting the end-results We have all tried to correct drop-foot by silk ligaments, tenodesis, Gallie's operation, etc., and our percentage of failures has been entirely too great. We have all had the experience that Dr. Campbell mentioned of having the foot corrected by the various procedures, but seeing the patient a year or so later with the foot dropped down again. I think that Dr. Campbell's presentation is convincing. The roentgenograms show his results, and, as stated, I have seen his cases and know that the operation does what it is intended to do; that is, it prevents the foot-drop. Dr. Campbell mentioned the procedure being used in spastic paralysis. That is interesting. I wonder how it will work out, and I should like to ask Dr. Campbell if he has had many cases of that kind. The operation must be done carefully. The technic must be correct. It is one of these operations which are not difficult, but still the technic must be strictly adhered to if we want to get results.

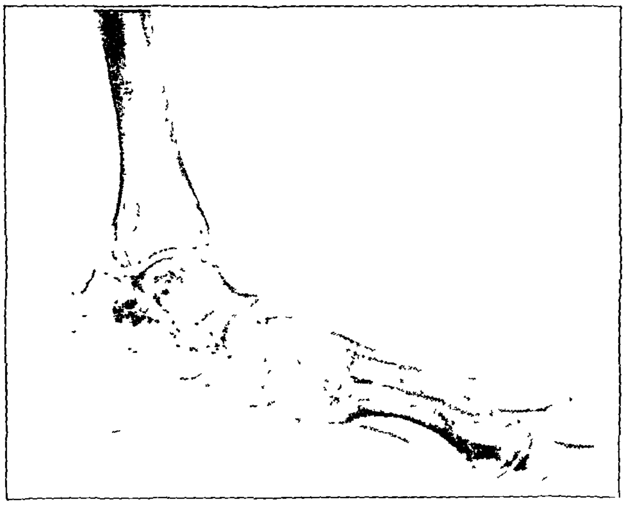

Fig. 8.—Pyramid of transplanted bone posterior to ankle joint, three months after operation.

Dr. M. N. Smith-Petersen, Boston: Dr. Campbell states that the operation has stood the test of time. I do not believe four years is sufficient time to judge the operation by. No weight bearing joint in the body normally has a bony block limiting its range of motion. Any joint that has a bony block as the result of a fracture as a rule sooner or later becomes painful. Dr. Campbell did not make any reference to postoperative pain. If there is no pain during the early postoperative stages, there is apt to be pain in the course of years because of the prolific changes resulting from the constant irritation at the point of impingement.

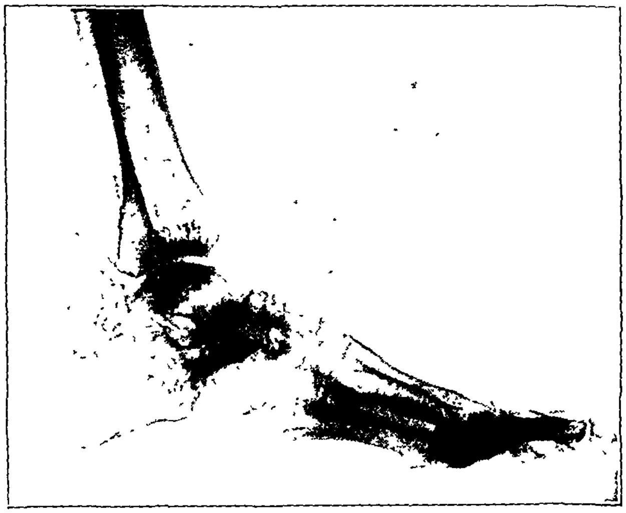

Fig. 9.—End-result eighteen months after the operation, with the bone block within the ankle joint and impinging on the posterior aspect of the tibia; fusion of graft of the subastragalar joint may also be noted.

Dr. W. G. Stern, Cleveland: On behalf of the Foot Commission of the American Orthopedic Association, whose work Dr. Campbell mentioned in his paper, I wish to state that as far as I know the sentiments of the other members of the commission, they agree with the opinion expressed by Dr. Campbell: that no arthrodesis operation on the tibio-astragalar joint is indicated in any condition in which it can possibly be avoided. The original operation of this kind was proposed by Goldthwaite many years ago to cure drop-foot, and his idea was again rejuvenated by Dr. Steindler in an operation he speaks of as panarthrodesis. The commission did not have time to investigate enough of Dr. Steindler's cases to express any definite opinion about it, nor did it know of Dr. Campbell's operation, or see a sufficient number of cases of Hoke's operation that had lasted long enough from which to form any definite opinions. But in the opinion of the members of the Foot Commission, the arthrodesis operation on the tibio-astragalar joint should be avoided, because we all know the sad results in walking that will come with a perfectly stiff ankle joint. Whether or not Dr. Campbell's operation will stand the test of time or use, as Dr. Smith-Petersen infers it will not, I do not know. Nevertheless, it is the only type or kind of operation which in my opinion is going to be successful. Out of all the cases of drop-foot treated by Gallie's operation, Peckham's operation or ligament suspension that we learned of or saw, there was only the smallest proportion in which there was anything like a permanent success achieved.

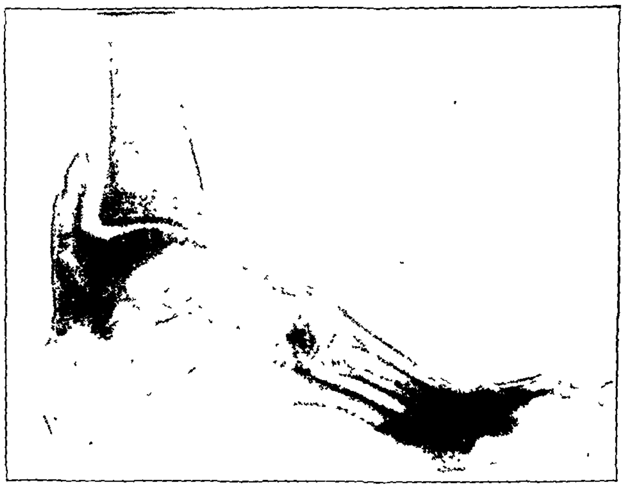

Fig. 10.—Atypical result caused by transplanting an excessive amount of bone. The functional result is excellent.

Dr. J. W. Sever, Boston: A number of years ago when Dr. Campbell presented this procedure for the first time, I discussed it and I objected at that time seriously to it, as it did not seem to me that it was a satisfactory procedure or even a necessary procedure. I am perfectly willing, in view of the results he has reported now, to retract many of the things I said then, and it seems to me, with the exception that Dr. Smith-Petersen cited, that it offers a very satisfactory method for preventing or correcting a drop-foot. At the Children's Hospital in Boston we have been using the Hoke operation for these cases a good deal and have found it extraordinarily satisfactory. There is not much mutilation. There is adequate and excellent correction of the deformity, and, apparently, there is a permanent result without blocking of the motion in the ankle joint. I should like to ask Dr. Campbell whether in putting in this bone wedge he denudes the posterior surface of the tibia of its periosteum, and in the cases in which he operated sufficiently long ago is he able to tell whether there is disability in walking as a result of this bony block, with restriction of motion in the ankle joint, and whether by such insertion of a bone graft he can control either the valgus or the varus deformity.

Dr. P. D. Wilson, Boston: I differ with Dr. Stern that there is no adequate operation for relief of drop-foot. We have all been doing the Hoke operation, and Dr. Sever failed to mention specifically the thing that we try to do in all such cases, and that is to get posterior displacement of the foot, with the excision of the head and neck of the astragalus to a considerable degree, with the loosening up of the os scaphoid joint, with subsequent fusion, but first of all getting the foot displaced well backward so that the heel projects far back. We do exactly the same thing that we do with an astragalectomy; we change the leverage, the long lever in front; we shorten that up and lengthen the posterior lever, and of course that does stabilize the foot not only in the lateral direction but also in the anteroposterior direction.

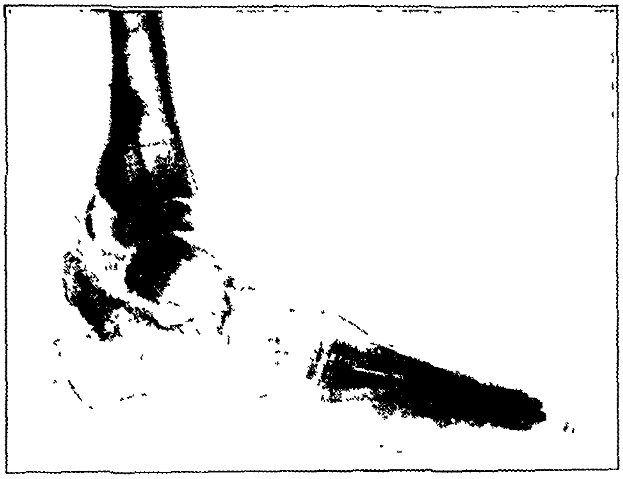

Fig 11.—Bone block accomplished by turning forward upper third of os calcis in boy, aged 6, who had previously had midtarsal fusion

Dr. Albertus Cotton, Baltimore: Has Dr. Campbell had any experience with this operation in adults? I should think the point brought out by Dr. Smith-Petersen is one worthy of attention. I should think there would be danger of later development of hypertrophic arthritis in this particular operation, especially in adults. We know how frequently this condition develops after joint injury in adults.

Dr. Rex L. Diveley, Kansas City, Mo. As an associate of Dr. Frank Dickson, I should like to report a series of twenty-five cases in which the operation just described by Dr. Campbell has been performed These cases we have studied over a period ranging from six months to two years Dr. Campbell's operation has proved very successful. When we first started to use this procedure, we turned down a shelf from the posterior aspect of the tibia; but later we found it was much easier and just as effective to turn a shelf up from the superior aspect of the os calcis, turning this wedge of bone up on the lower end of the posterior aspect of the tibia, and holding it in place by suturing the soft part tightly over this wedge of bone. We have collected a series of roentgenograms of these cases and find that the shelf that was turned up from the os calcis hypertrophies *and forms a stoplock which* does not let the foot drop. We have found it very important in cases of varus or of valgus first to arthrodese the subastragaloid joint, either by a simple subastragaloid arthrodesis or a Hoke operation, generally combining this with a mediotarsal arthrodesis.

Dr. W. C. Campbell, Memphis: In answer to Dr. Henderson, the procedure has been employed successfully in spastic paralysis, but always associated with other measures, such as tenoplasty or Stoeffel's resection for that particular condition. Dr. Smith-Petersen speaks of there being no analysis in nature to the bone block secured as a result of the operation under discussion. In paralysis and many other disabilities a restoration to normal is impossible, and surgery is frequently employed to make as good a substitute as possible —for instance, *there is no analogy in nature to that produced* by his operation for sacro-iliac arthrodesis. I regard three years as sufficient time to determine the result in all above 14 years of age. In young children, as mentioned, the element of growth must be considered in any operation on bone; but there are no epiphyses involved and the results have been satisfactory, as described above. The value of the procedure has been proved to my colleagues and to me. Of course, years *must elapse before any new met*hod becomes an accepted standard procedure. As stated, pain was present in only two adults for a few months but did not persist; however, I have observed continuous pain following astragalectomy and other radical operations, which I am sure has been the experience of others. In answer to Dr. Cotton: There have been no arithritic changes following the bone block operation, nor has there been a tendency to proliferate. As a rule, the multiple grafts contract in fusing, forming a solid mass continuous with and a part of the os calcis. The posterior surface of the tibia is not denuded, as the object of the operation is to limit and conserve ankle motion, not to destroy. In answer to Dr. Sever: Valgus and varus are irrelevant to the subject, and are of interest only when associated with "dropfoot," other well known measures for these conditions being employed. The object of the Davis, Hoke, Dunn and Ryerson operations was first advanced by Davis; namely, a triple arthrodesis with backward displacement of the foot for the purpose of stabilization and the correction of lateral deformities. These measures rarely control anteroposterior motion.

TOTAL AND SUBTOTAL RESTORATION OF THE NOSE *

VILRAY P. BLAIR, M.D.
ST. LOUIS

To be acceptable, a surgically reconstructed nose must be covered with smooth skin, have a normal contour, have an epithelial lining, and provide an adequate airway. Though not always necessary, a rigid support of bone or cartilage will usually add to the quality of the result (Figs. 1 and 2). It is very desirable that the size and form of the new nose be in harmony with the particular face.

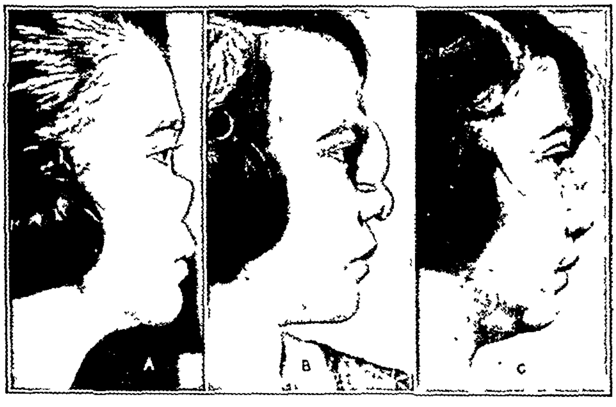

Fig. 3—Lining, tip, columella and upper half of external nose restored by a forehead flap After all scar had been excised and the alae dropped to the normal position, the flap was let in through a transverse incision across the bridge. The raw surface inside was thus lined and the free end of the flap was brought out below and turned into the defect in the tip, leaving enough redundancy in the turn to make the columella. Later the pedicle of the flap was cut across and turned over to make the covering of the upper half. *B*, forehead flap turned in; *C*, completed nose, which contains no supporting framework. This nose would also be better for a cartilaginous bridge. This girl later died of an intercurrent gastric hemorrhage.

Nasal reconstruction amounts to sculpturing with the live tissues for material, and this must be done in conformity with good surgical usage, combined with mechanical accuracy and some artistic feeling (Fig. 3).

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* From the Surgical Department of the Washington University Medical School.

* Read before the Section on Surgery, General and Abdominal, at the Seventy Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925

* Because of lack of space, this article is abbreviated in The Journal by the omission of a number of illustrations The complete article appears in the Transactions of the Section and in the author's reprints.

Phidias seems to have been unique among sculptors in his ability to make a free hand carving of his ideal without previously working it out in some plastic material, and there are probably few surgeons of sufficient skill to emulate Phidias' example. Even a tailor will make a pattern before cutting into his cloth. Before any flaps are transplanted, all binding scars should, as far as possible, be removed, and this must be provided for in cutting the patterns (Fig. 5). Having assurance of the patient's physical fitness and of a free air passage (Fig. 4) the first step in reconstructing a nose or any other molded feature is to make an accurate plaster reproduction of the face and then build up the desired feature in clay (Fig. 5); from this, patterns can be made in tinfoil and lead

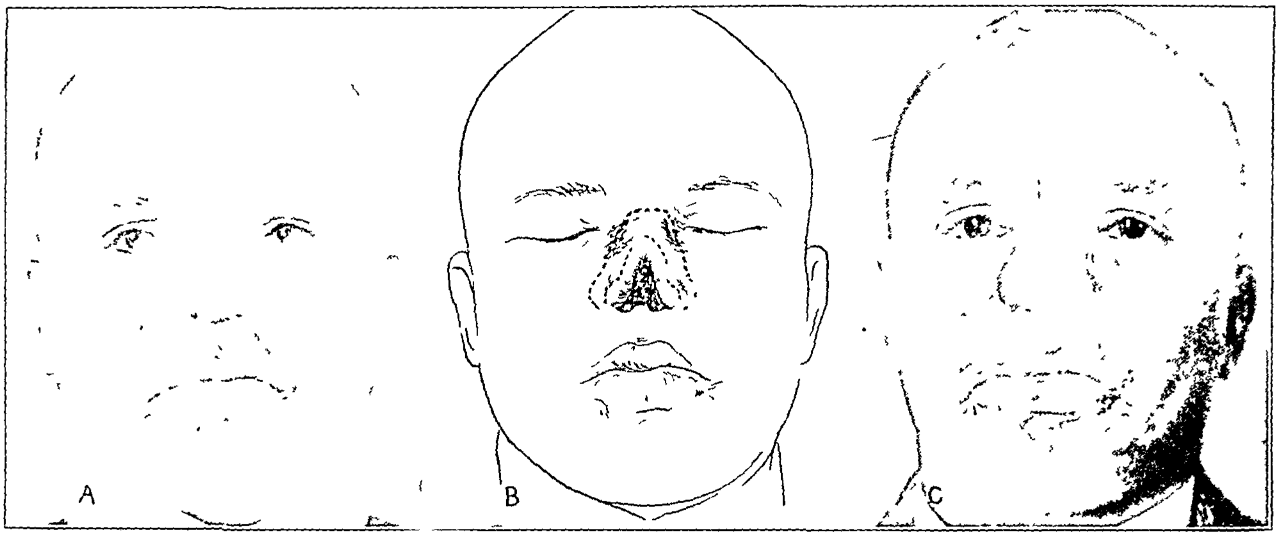


Fig 4—Loss of lining and much of covering; the remaining part had healed over leaving no external opening The first step was to make an airway by turning in the skin to line the anterior part of the nasal tube (*B*) At the same operation a flap was raised from the forehead that provided for covering, lining and columella, and it was at once sutured back in place (Delayed transfer of the flap was practiced in all these cases) To hurry on the work the step of making a preliminary deep incision around the attachment of the new nose was omitted, and we subsequently had considerable trouble with the lateral spreading of the foundation, which partly accounts for the asymmetry of the alae shown in *C*

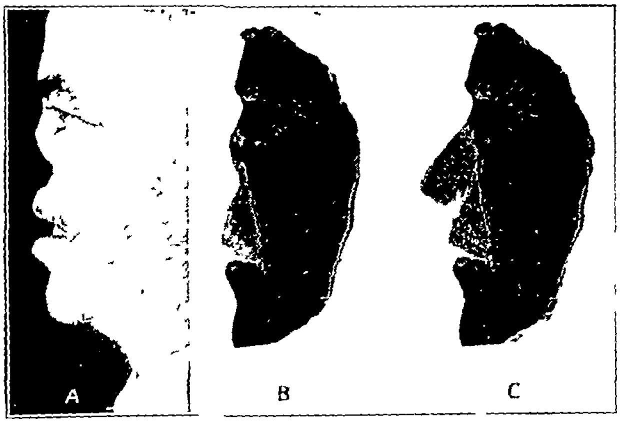


Fig 5—*A*, a man who has lost the lower half of the nose, adjacent part of the cheeks, and almost all of the upper lip except the mucosa *B*, the lip built up in clay from which a pattern was cut of a flap to be made from the right side of the forehead, base at the temple, this restored the lip and cheeks *C*, nose built in clay on the clay lip From the former, a pattern was cut for a flap from the left side of the fore head, pedicle over inner end of left brow, to make the lining, covering and columella of the nose By having the whole plan worked out in this way, the time of hospitalization is materially shortened and the number of operations is reduced

The next step is to locate available material for the repair. Cartilage is commonly the most available and docile supporting material. Cartilage or bone is most often used in the form of an insert in the dorsum (Figs. 6, 28 and 29). Cartilage can be incorporated into the lining or covering flap before transferring it, but this is not the best plan (Figs. 7 and 8). If bone is used, it must have contact with bone; otherwise it will be absorbed. In some instances an osteoplastic flap is very useful (Figs. 9, 10 and 11). It is neither practicable nor necessary to reproduce the septum, but a good columella is a necessity (Fig. 12). In certain cases, the depressed or misplaced framework of the nose can be chiseled from its unnatural attachment and held in the desired position by a dental splint until union has occurred (Fig 11).

A pedicle flap from the arm (Figs. 15, 16 and 17), neck or forehead is commonly used for nasal covering. The ideal source is the forehead when sufficiently broad; it molds well and closely resembles the normal nose skin, but its use leaves a permanent blemish that cannot be entirely hidden by the most perfect skin graft (Fig. 12). In the presence of an extensive defect, baldness is sometimes a blessing (Figs. 18 and 19). Our observation of depilation by irradiation is that it is uncertain of result (Figs. 15, 16 and 17). In women, a transverse flap from the upper part of the neck leaves comparatively little ultimate marring and

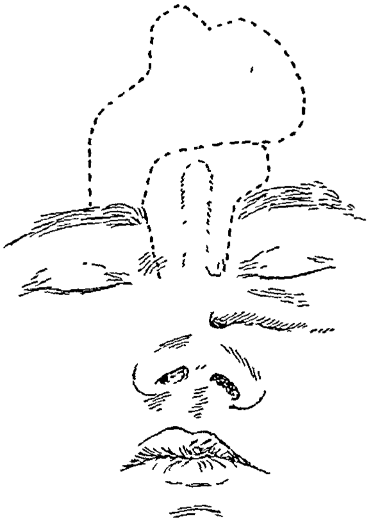


Fig 8 (same patient as in Figure 7)—The central flap included the full thickness to the periosteum, and between the muscle and skin a piece of the ninth rib cartilage was implanted at the time the flaps were first raised Later the center flap was dropped down raw surface out, to form the lining, and the lateral flap was rotated so that it had skin surface out to make the covering of the new nose may give grateful relief from a double chin, but the amount of material is limited (Fig. 20). A flap from the inner surface of the arm is of good surface texture but poor color, and may contain coarse fat lobules that prevent satisfactory contouring; the circulation of this flap is not always good (Fig. 21). A jump flap might be used. Except for small defects, the obtaining of flaps from the cheeks is usually not good practice (Figs. 22, 23 and 24).

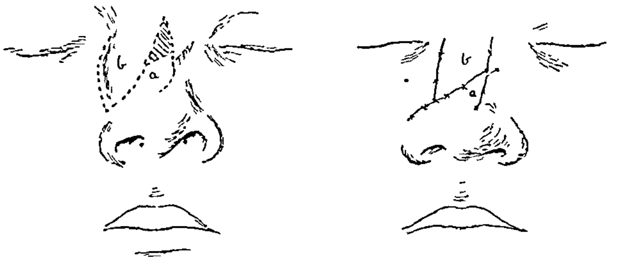


Fig. 11 (same patient as Figure 9).—To save the patient's limited time, flaps were made containing the full thickness of the nasal wall, skin, bone and cartilage, and mucosa, and these were readjusted in a way that brought the ridge to the midline and lengthened the nose. The septum was resected at the same operation. The long upper flap was held in place by a wire suture fastened to the upper left first molar. Patient returned home twenty-one days after operation.

The lining in some cases can be procured from the dorsum of the remaining part of the original nose (Figs. 3, 15, 16, 17 and 21), but in others will have to be provided from the same source as the covering. We have used a plan for restoring the whole nose by one flap which will furnish covering, lining, columella and alae, and in the folding, the general form of the nose will be reproduced.[1] The columella is frequently obtained from the lip. Except in a few instances, lining the new nose with free Thiersch or full thickness skin grafts has not been as satisfactory in our hands as has the use of a flap. In partial reconstruction, carefully made suture lines on the external surface of the nose, in time, usually become almost or quite invisible (Figs. 25 and 26). When destruction has been extensive, it may be necessary to build up the cheeks and lip before beginning on the nose itself, and this may make great inroads on the supply of desirable material (Figs. 27, 28 and 29). In planning the new nose, its final blood supply, after cutting the pedicle of the flap, must be considered. In some cases the covering flap may extend out on the cheek to insure adequate circulation. Wherever possible, ample provision should be made for shrinkage, failure of union with resuture, and adjustment of flaps; but, on the other hand, the more accurately the flaps are cut and sutured at the first operation, the fewer secondary adjustments will be required. This is a matter that furnishes opportunity to exercise nice judgment based on previous observations and catastrophes. A preoperative estimate of the patient's psychology is tremendously important. Some will be satisfied with any ordinary result, or less, while there are a few whose mental depressions will not be even partially relieved by the best obtainable result. Suicide or a life given over to useless self-pity has been the occasional sequence of really good nasal reconstructions (Figs. 30, 31 and 32).

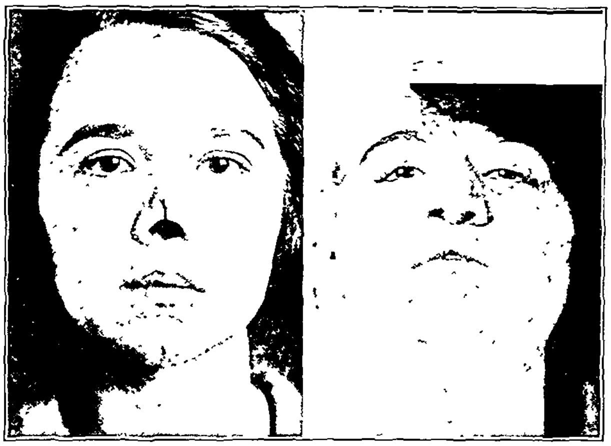
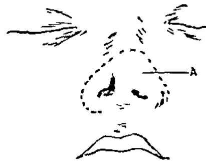


Fig. 12 (same patient as in Figure 3).—Columella made from an intermediate part of the forehead flap that lined the nose and made the tip. No attempt made to reproduce the septum. The hair is worn low on the forehead to hide a not very good full thickness skin graft.



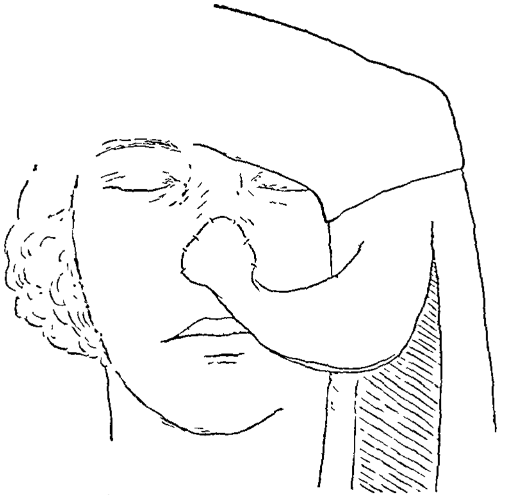


Fig. 17 (same patient as in Figure 15).—Repair was made by turning down the skin of the alae and the lower half of the dorsum to form lining, and covering this raw surface with a flap from the arm. The covering flap was conformed with sutures to reproduce the natural curves of the alae and tip. There was quite a bit of hair on the arm flap, the destruction of which required sufficient radium irradiation to cause a severe surface blistering. Such a reaction must for a time cause some apprehension as to the effect on the flap itself. *A*, loosened and turned down for lining.

The conclusions from army and civilian observations are that few people are content to wear permanently an artificial feature, no matter how good (Figs. 33 and 34).

The more carefully and accurately a plan is worked out before actual surgical work is begun, and the more closely good surgical principles are adhered to, the better will be the result, the shorter will be the time required, and the fewer will be the necessary operations.

Metropolitan Building.

ABSTRACT OF DISCUSSION

Dr. George M. Dorrance, Philadelphia: Dr. Blair is to be congratulated on his excellent results. There are certain facts on which we differ; one is taking the flap from the arm or chest. One must be very careful not to make these persons conspicuous. If one takes a flap from an arm or chest, it usually has a blanched white color, which is very different from the face. I have a patient under my care at present who was operated on fourteen years ago by a surgeon who replaced a cheek and nasal bone defect with a flap from the chest. Her appearance now is quite grotesque, on account of the white color of the flap. Flaps from a chest and arm have a tendency to take on fat in most cases.

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[1] This plan was presented, with the writer's consent, by Dr. Robert Ivy before the Section on Stomatology of the American Medical Association in June, 1924 (Ivy, R. H.: Repair of Acquired Defects of the Face, J. A. M. A. 84: 181 [Jan. 17] 1925).

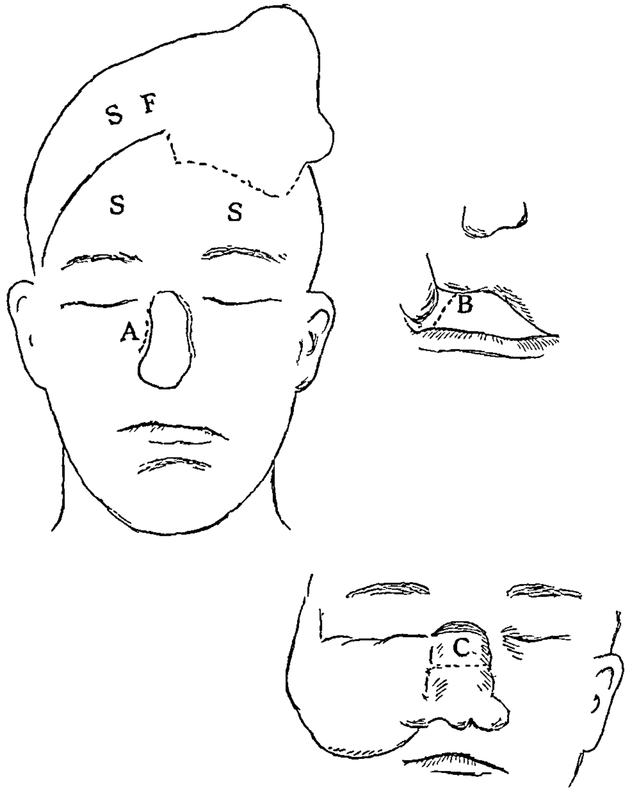

Fig. 19 (same patient as Figure 18).—Repair was made from a large flap cut from the bald vertex scalp with a left temporal base This was so planned as to furnish lining, covering and columella, and had a prolongation out on the right cheek to insure a blood supply after the pedicle was cut. The lip had been partially restored by cheek flaps, but was later supplemented by a piece taken from the pedicle of this vertex flap. Before any of this was done, the cheeks were "stepped" forward to furnish a foundation for the new nose (Figs. 28 and 29). *S, S,* scar; *S F,* scalp flap; *A,* cut and sutured for fixation; *B,* brought forward and sutured to push lip forward; *C,* turned in for lining.

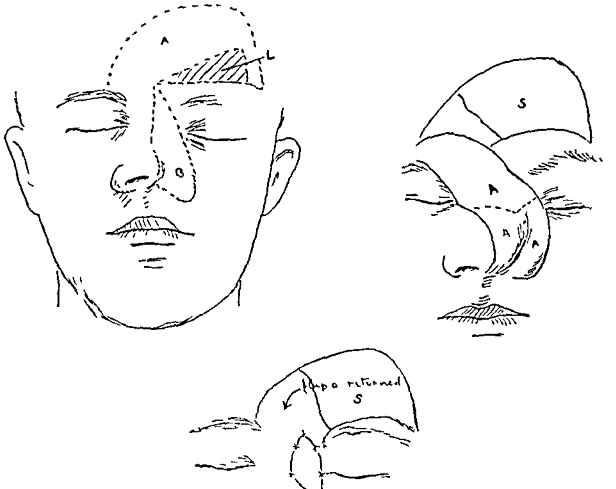

Fig. 24.—Plan of making flaps used for patient in Figures 22 and 23: *b,* lining of nostril; *S,* skin graft.

Dr. George C. Schaeffer, Columbus, Ohio: I wish to emphasize three points. The first is the necessity of a good lining for the flap. A forehead flap will contract, unless there is a good lining. It can be lined by scar tissue or by a layer of epithelium or this modeling compound, placed under the skin covered by the Thiersch graft. Cases lined in this way are very dry, and patients complain of considerable dryness of the nose. In several recent cases, I have tried the transplantation of small strips of buccal mucosa from the mouth, putting these on the flap before putting the flap into shape. My experience has not been enough to warrant me in saying what the results are going to be, but I believe the method has a future. The second point is the necessity of a good appliance to hold the tissues in shape while healing is taking place. It is much easier to build a nose over an appliance and hold the nose in good shape than to put in an appliance to hold the nose in shape after it has become distorted. The third point is the advisability of using cartilage for a framework rather than other tissues. Recently it has come to my notice that some men are using ivory, shaping it so as to make a bridge for the nose. I speak of this practice merely to condemn it, because I think ivory is nothing more or less than a foreign body, which will later give trouble. As to the transplanting of the cartilage before the transplanting of the flap, I understand that Dr. Blair favors the method of transplanting the cartilage after the flap is in place. It is the method of choice, but so far my experience has been that transplanting cartilage under the flap is very satisfactory.

Dr. Robert H. Ivy, Philadelphia: Dr. Blair has demonstrated that it is possible to reconstruct a presentable, prominent and functioning external nose from a single forehead flap, and my own experience tends to confirm his findings in every respect. To obtain good results, the flap must be cut from a pattern previously prepared from a wax or clay model of the nose, built on a plaster cast of the face. The folding of the distal end of the forehead skin flap in the manner advocated by Dr. Blair is sufficient to provide lining for the lower part of the nose and to make the columella. By this means alone, sufficient prominence and rigidity of the tip of the nose can usually be obtained, without the use of cartilage or other supporting tissue in this region. Costal cartilage implantation is occasionally of advantage, to give greater prominence and stability to the upper part of the nose where the nasal bones are absent or depressed. But even then the forehead flap alone usually gives sufficient prominence. When costal cartilage is used, it can be implanted, first, under the forehead skin before bringing down the flap; secondly, under the remaining nasal skin, later bringing down the flap over it, and thirdly, under the forehead flap after it has been brought down. I believe with Dr. Blair that one of the last two plans is far preferable to the first, because it is much more difficult accurately to shape and place the cartilage beneath the skin of the forehead before bringing the flap down than it is to insert the cartilage at the beginning in its final position. I have found that the defect on the forehad can be best covered by a full thickness skin graft from the abdomen and supported by a sea sponge dressing under pressure.

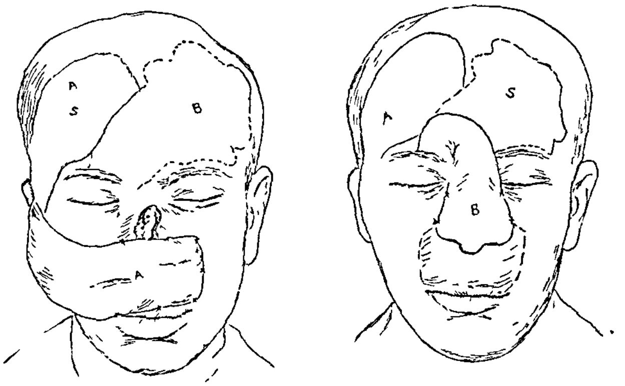

Fig 29 (same patient as in Figure 28).—The first step was to restore the lip with a flap from the right side of the forehead. The nose flap, furnishing lining, covering and columella, came from the left side (*A* and *B*); *S,* skin graft.

Dr. W. W. Carter, New York: I began transplanting bone about fifteen years ago. I believe the clinical results now enable me to speak with some certainty as to what the final results are in this work. Bone and cartilage have distinctive uses. I use bone where I need strength and growth in transplanted tissues, I use cartilage chiefly as a filler, and I use combined bone and cartilage for the purpose of reproducing a natural nose and preserving the resilience of the nasal tip. Bone not only lives but it grows, and its growth is regulated by the functional demands of the part. My clinical experience assures me that bone can be successfully transplanted in the young. I have had two or three patients brought to me in whom it was absolutely necessary to transplant the bone because the parents demanded it. The deformity in one child was preventing her from going to school, and it was necessary to do the operation. Some of these cases are of sufficiently long standing for me to note final results and express an opinion. In one case in particular, the patient was operated on at 10 years of age. Now, at 13½, this young girl has a perfectly developed nose. Apparently the nose has the growth and vigor normal for her age. Bone, when properly transplanted, is not absorbed, but when it is not properly transplanted it is absorbed. If infection occurs there is going to be some loss of bony tissue even though the infection is quickly eradicated. The loss may be molecular, giving the edge of the transplant a dendritic appearance under the roentgen ray. Bone is pretty nearly as resistant to infection as cartilage. It continues to grow, and the growth is regulated by the functional demands of the part. I have noted in several cases in which fracture of the transplant has occurred that the ends of the fragments reunited in a perfectly normal manner. In one case, two years after the operation the transplant was fractured; it was set and the fragments became reunited.

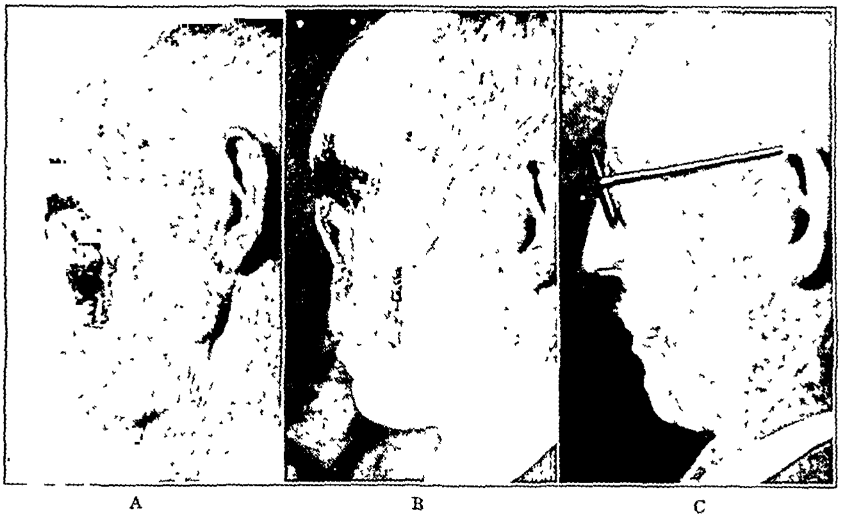

Fig. 34.—Man who had lost the nose, the whole upper lip, the contents of the orbit with the lids, and much of the cheek from recurrent carcinoma. The forehead was not available as a source of flaps The upper lip was made and the orbit and cheek defect covered with a transverse flap from the neck (*B*). The nose is of painted vulcanite resting on a spur on a dental bridge and held by spectacles (*C*).

Dr. V P. Blair, St. Louis: Ivory is to be classed with other foreign substances. There is a great deal of talk at present about the use of ivory. It comes out of Germany, and I think its use will go the way of other attempts to implant foreign substance in the tissues. I have had the opportunity of seeing a number of roentgen-ray studies of Dr. Carter's bone transplants, and I agree with him. I have a few children scattered over the country on whom I have done the bone-cartilage transplants described, hoping they would grow. He greatly encourages me, because I have not seen them since.

Infant Mortality.—According to the U. S. Children's Bureau, New Zealand has just broken her own low world record for infant mortality; only forty infants for every 1,000 born now die in their first year of life. The record for the United States is seventy-two for every 1,000.—*Science Service.*

ADIPOSIS DOLOROSA (DERCUM'S DISEASE)

A CLINICOPATHOLOGIC STUDY *

N. W. WINKELMAN, M.D.
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AND
JOHN L. ECKEL, M.D.
BUFFALO

In 1892, Dercum[1] first gave the name "adiposis dolorosa" to a new clinical entity present in three cases, two of which had come to necropsy. Since that time about 200 reports have been added to the literature. Of these we have been able to find only fifteen that have come to necropsy, and there has been such a great diversity of findings that any additional information gained from necropsy material should be reported. For this reason the following case is presented.

REPORT OF CASE

History.—E. B., a colored widow, aged 50, was admitted to the Philadelphia General Hospital, June 21, 1924, because of a cough, which had been present for one week As this patient presented extreme obesity, this phase of her case was studied. There had been no cases of obesity in her family so far as she knew. She began to accumulate fat rather gradually in girlhood, but there had been no change in the last twenty years. The obesity was most marked about the thorax, abdomen, back, hips and upper arms. At no time were her hands, face or feet involved. For "years" her fat had been painful on pressure. She had been married, but her husband had died many years before of unknown cause. She was never pregnant. She was up and about the house until one week before admission to the hospital. At this time she developed a cough. There had been ulcers on the legs.

Examination.—The patient was huge, weighing 460 pounds (208 kg). The abdomen was very large, and the fat hung down to the knees when she stood upright. About both legs there were numerous ulcers, which were discharging freely and had an offensive odor. She had bullae on the thumbs. The arms, thorax, back and hips were very large. The upper arm measured 23 inches (58 cm.) in circumference, the wrists 8 inches (20 cm.); thighs, 34 inches (86 cm.); ankles, 12 inches (30 cm.), and the abdomen 72 inches (182 cm.). The breasts were large and pendulous. There were large rolls of fat about the back, thighs and abdomen, with deep creases and ulcers between the folds. The face, hands and feet were free from excessive fat. The fat was nodular and painful on pressure. There was slight dyspnea. She fatigued very easily, both mentally and physically. Her temperature during her few days in the hospital ranged from 98 to 102 F.; the pulse rate ranged from 80 to 108 per minute, and respirations varied from 20 to 30 per minute.

The heart was normal in size, and the sounds were of fair quality; there were no murmurs; the vessels were moderately sclerotic.

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* From the neurologic laboratory and wards of the Philadelphia General Hospital.

* Read before the Section on Nervous and Mental Diseases at the Seventy Sixth Annual Session of the American Medical Association, Atlantic City, N J., May, 1925.

[1] Dercum, F. X.: Three Cases of a Hitherto Unclassified Affection Resulting in Its Grosser Aspects, Obesity, but Associated with Special Nervous Symptoms, Am J. M Sc. **104**: 521, 1892.

The ulcers on the legs varied in size, depth and width. About the largest there were elevations, except in the upper portion of the thighs, where some were very red and were discharging freely. There was a papulovesicular eruption of acute appearance on the upper thighs. No visual disturbances could be made out, and there was no history of convulsions or of hemorrhage. Through some error, no laboratory work was done before her sudden death, which occurred on the fourth day after admission.

Necropsy (Dr. Case).—The body was that of an extremely obese adult negress (Fig. 1). The subcutaneous fat in the anterior abdominal wall measured 16 cm. in thickness. The mesentery and omentum contained a relatively small amount of fat. The heart was uniformly enlarged (490 gm.), with but slight increase of fat at the base. The myocardium was firm, red and of good texture, without fatty infiltration; the valves were competent. The left suprarenal measured 7.7 by 3.8 by 2.4 cm. The increase in size was due to an adenomatous growth of cortical tissue forming a large circumscribed, flattened, yellowish mass, occupying most of the organ. The right suprarenal was within normal limits as to size and structure. The kidneys were large and firm; the capsules stripped easily, and the structure within was normal. The uterus was firm and contained several polyps, some of which were necrotic. The ovaries were small and atrophic. The pancreas was firm and of a light straw color, with little or no fatty infiltration. The liver weighed 2,860 gm. It was firm and brownish red. There was no gross evidence of fatty change, a point of interest in view of the extreme obesity. The thyroid was not enlarged; it was firm and dark red. The cut surface was dark red and had a translucent appearance. The aorta showed moderate sclerosis. The sella turcica was enlarged in all directions; it measured 2.2 cm. laterally by 2 cm. anteroposteriorly by 1.4 cm. in depth. The pituitary body was distinctly enlarged, measuring 2.1 by 1.8 by 1 cm. The infundibulum and tuber cinereum were grossly normal. Lying on the surface of the sella was a dark red, soft, hematoma-like mass. On sagittal section this extended one-half the depth of the organ, and then became yellowish and slightly laminated. On the right this was replaced by a cavity which was small and with an irregular outline.

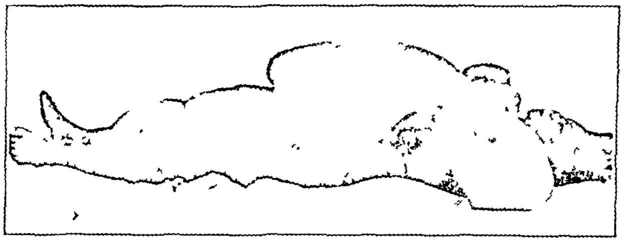

Fig. 1.—Postmortem appearance of patient.

Microscopically (Dr. E. B. Krumbhaar), the pituitary (Figs. 2 and 3) was made up chiefly of cellular tissue resembling the anterior lobe, and in the center was an open space with irregular walls of fibrous tissue (necrosis). At each end, tissue resembling posterior lobe was seen, but this contained more cells and congested vessels than normal. The normal relations of the various lobes could not be made out. The cellular structure varied in different parts; it was unusually congested throughout. In some places the alveoli resembled the normal anterior lobe. No accurate differentiation into acidophil, basophil or chief cells was possible. In other places the alveoli arrangement was lost, and the cells were packed together without arrangement and without connective tissue stroma. The cells contained round or oval vesicular nuclei, with a small amount of acid-staining protoplasm. In one place in the capsule was a small nodule that contained relatively undifferentiated cells packed close together.

Microscopic sections of other organs (Dr. Belk) showed as follows: There was slight fatty infiltration of the pancreas. The left suprarenal showed adenoma (Fig. 4). The ovaries were atrophic and contained small cysts. The liver showed cloudy swelling, with moderate fatty infiltration and portal cirrhosis. There were benign papillomas in the uterus. The thyroid was normal.

Serial sections of the region of the tuber cinereum showed fairly recent petechial hemorrhages in the region of the walls of the third ventricle (Figs. 5 and 6). No other abnormality could be made out. The rest of the brain showed nothing of note.

LITERATURE

The following is a brief abstract of the cases coming to necropsy:

Case 1 (Dercum,[1] 1892).—F., aged 64, married, the duration of whose obesity was fifteen years, weighed 300 pounds (136 kg.). The fat had accumulated gradually, and it was tender on pressure. She had occasional uterine hemorrhages. Postmortem examination revealed the thyroid small, indurated and infiltrated by calcareous matter in both lobes. The liver showed fatty infiltration. There was an ovarian cyst. No mention was made of the pituitary gland. No microscopic examination was done.

Case 2 (Dercum,[1] 1892).—F., aged 60, began to accumulate fat in her eighteenth year. She had a history of epistaxis and hematomas. The fat was tender, and there was mental torpor. Necropsy showed the fat distributed in irregular masses. The thyroid was larger than normal, was firm and contained much calcareous matter. The liver showed fatty infiltration. The kidneys were shrunken. No mention was made of the pituitary gland. No microscopic examination was done, as the specimens were lost.

Case 3 (Dercum,[2] 1900).—A widow, aged 51, whose condition began in the arms and spread to the trunk, had had painful swellings and neuritic pains. Necropsy showed an irregular, atrophied thyroid gland, with occasional areas of attempts at compensatory hypertrophy. There was extensive interstitial neuritis of the nerves in the fat masses. The tract of Goll showed slight degeneration.

Case 4 (Burr,[3] 1901).—A very obese woman, aged 36, who weighed about 300 pounds (136 kg.), died of nephritis. The fat was painful. Necropsy revealed a glioma of the pituitary gland, which was the size of a walnut. Marked internal hydrocephalus was present. The ovaries were small and hard. The peripheral nerves in the fat showed interstitial changes. The thyroid contained a concretion the size of a small chestnut, also colloid degeneration and atrophy with absence of secreting cells in many acini. The liver showed fatty degeneration.

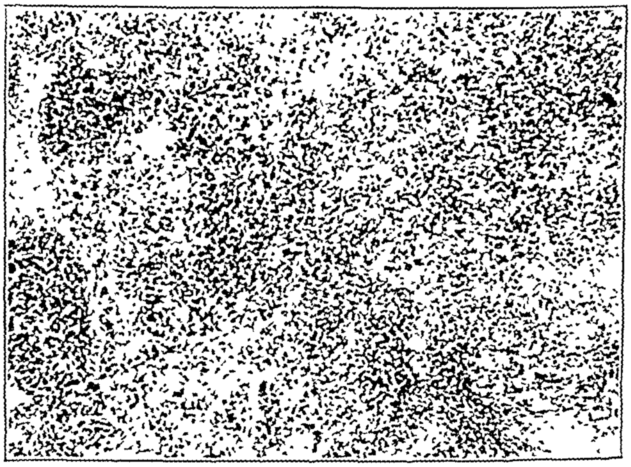

Fig. 2.—Marked adenomatous changes in pituitary as seen under low power.

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[2] Dercum, F. X.: Autopsy in a Case of Adiposis Dolorosa with Microscopical Examination, J. Nerv. & Ment. Dis. 27: 419, 1900.

[3] Burr, C. W.: A Case of Adiposis Dolorosa with Necropsy, J. Nerv. & Ment. Dis. 27: 519, 1900.

Case 5 (Dercum and McCarthy,[4] 1902).—A man, aged 39, whose obesity began at 17, had had convulsive seizures during his last five years. There were frequent attacks of epistaxis. Necropsy revealed adenocarcinoma of the pituitary body. There were fibroid hemolymphoid nodules in the subcutaneous fat. There was interstitial neuritis of the nerve filaments in the fat nodules. The spleen revealed interstitial hyperplasia. The testes were defective. The right suprarenal was hypertrophied.

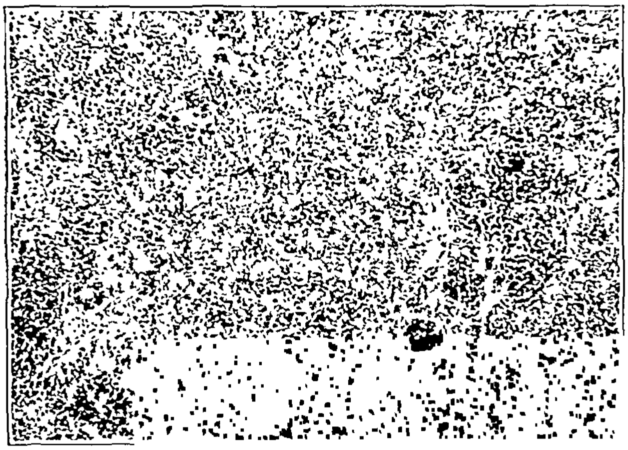

Fig. 3.—Marked adenomatous changes in pituitary as seen under low power.

Case 6 (Ballet,[5] 1903).—Obesity was present for eight years in a woman, aged 68. She was very depressed and suicidal. Necropsy revealed diffuse sclerosis of the thyroid gland and interstitial neuritis of the nerve filaments in the fat nodules. There was fatty infiltration of the liver. No examination of the pituitary body was made. The cord and cortex were normal.

Case 7 (Rome,[6] 1904).—A woman, aged 55, with obesity for ten years, had had no vasomotor nor sensory disturbance. Necropsy revealed no abnormality of the thyroid, pituitary body, or cord. The heart was dilated. There was interstitial nephritis. There were no microscopic lesions to explain the condition.

Case 8 (Guillain and Alquier,[7] 1906).—F., aged 57, whose condition had existed ten years, had had mental symptoms and right hemiplegia. Necropsy revealed the pituitary body double the normal size, with marked increase of connective tissue in the anterior lobe and changes suggestive of alveolar carcinoma. The thyroid was hypertrophied with an increase of connective tissue stroma. The follicles were large and filled with colloid. No examination of the pancreas or the suprarenals was reported.

Case 9 (Loening and Fuss,[8] 1906).—A woman, aged 66, who began to accumulate fat at the age of 12, weighed 185 pounds (84 kg.). The fat was tender. She died of erysipelas. Necropsy revealed a thyroid the size of a walnut, with increase of the connective tissue stroma. The ovaries were atrophic.

Case 10 (Price,[9] Case 1, 1909).—A woman, aged 57, who lived but eleven days after admission, had no available history. A postmortem examination revealed marked increase of interstitial connective tissue of the thyroid gland with inflammatory changes. One lobe showed marked infiltration, while the other showed compensatory hypertrophy. There were some inflammatory changes in the pituitary body, with areas of round cell infiltration, suggestive of an alveolar carcinoma. There was interstitial neuritis in the fat. The ovaries were sclerotic.

Case 11 (Price,[9] Case 2, 1909).—In this woman, aged 48, no history could be obtained. Her weight was 308 pounds (140 kg.). A postmortem examination revealed marked increase of connective tissue of the thyroid, and a dilatation of the acini with infoldings of the cuboidal epithelial lining. The pituitary body showed several areas of round cell infiltration.

Case 12 (Marchand and Nauet,[10] 1911).—F., aged 58, the duration of whose obesity was nine years, proved at necropsy to have a thickened pia, with narrow cortex and increase of neuroglia. There was inflammation of the peripheral nerves in the fat. The thyroid was large, with increase in the connective tissue. The follicles were normal. In places there was typical adenomatous structure with much colloid in the follicles. No mention was made of the pituitary body or the pancreas. There was atrophy of the ovaries with disappearance of follicles.

Case 13 (Falta,[11] 1913).—Necropsy done on a man, aged 56, in whom the duration of obesity was twenty years, revealed the thyroid as having a colloid struma, but everywhere abundant gland tissue of normal consistency was still found. There was perivascular infiltration in the fat tissue. No definite pathologic changes in the gland were present.

Case 14 (Dammann,[12] 1913).—The condition of F., aged 61, had existed twenty-six years. At necropsy the thyroid was not enlarged, but the left lobe contained colloid areas with dilated follicles. The connective tissue was thick and gave the appearance of an adenomatous hypertrophy. The pituitary body showed slight infiltration about Rathke's pouch. The pancreas showed focal fat increase. The suprarenals had hyaline areas. The ovaries were atrophic and had no remaining follicles.

Case 15 (Brüning and Walter,[13] 1919).—A boy, aged 10, in whom the condition had existed but nine months, had polydypsia, polyuria, glycemia and convulsions. There was amaurosis and augmented development of the secondary sex characteristics. Necropsy revealed an alveolar adenoma of the pituitary gland.

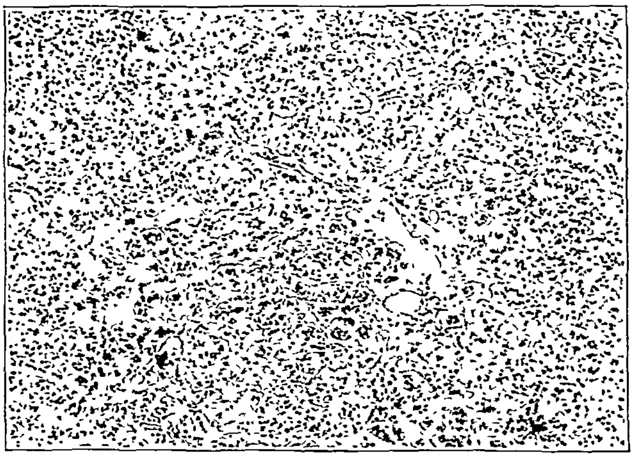

Fig. 4.—Adenomatous arrangement of suprarenal as seen under low power.

COMMENT

The case herein described fits in with the generally recognized syndrome of Dercum's disease, showing the following features: (1) obesity (exclusive of face, hands and feet), weight 460 pounds (208 kg.), with painful masses; (2) ulcers on the legs and bullae on the fingers, and (3) asthenia.

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[4] Dercum, F. X., and McCarthy, D. J.: Autopsy in a Case of Adiposis Dolorosa, Am. J. M. Sc. **124**: 994, 1902.

[5] Ballet, G.: l'Adipeuse douloureuse, Presse méd. **10**: 285, 1903.

[6] Rome, O.: Maladie de Dercum (adipose douloureuse), Lyon méd. **103**: 1005, 1904.

[7] Guillain and Alquier: Etude anatome-pathologique d'un cas de maladie de Dercum, Arch. de méd. exper. et d'anat. path. **18**: 680, 1906.

[8] Loening, K., and Fuss, S.: Schildrüsenveränderungen bei Adipositas dolorosa, Verhandl. d. Cong. f. inn. Med. **23**: 222, 1906.

[9] Price, G. E.: Adiposis Dolorosa, a Clinical and Pathological Study with the Report of Two Cases with Necropsy, Am. J. M. Sc. **127**: 305, 1909.

[10] Marchand and Nauet: Etude anatomo-pathologique d'un cas de maladie de Dercum chez une imbécille épileptique, Nouv. iconog. de la Saltpêtrière **24**: 144, 1911.

[11] Falta, W.: Endocrine Diseases, translated and edited by M. K. Meyers, Ed. 2, Philadelphia, P. Blakiston's Son & Co, 1916, p. 575.

[12] Dammann, K.: Zur Pathologie der Adipositas dolorosa (Dercumsche Krankheit), Frankfurter Ztschr. f. Path. **12**: 337, 1913.

[13] Brüning, H., and Walter, F. K.: Zur frage der Adipositas dolorosa (Dercumshe Krankheit) in Kindersalter, Ztschr. f. Kinderh. **24**: 183, 1919.

The pathologic findings were an adenoma of the anterior lobe of the pituitary body with enlargement of the sella turcica, an adematous hyperplasia of the left suprarenal gland, atrophy of the ovaries, and many recent hemorrhages in the thalamus and subthalamic regions.

On reviewing the necropsy findings of the fifteen cases in the literature, one is impressed by the pluriglandular involvement in most of the cases. In only two cases were there no definite changes in the ductless glands (Rome and Falta). Of the eleven patients in whom the pituitary body was examined, eight showed definite alterations; the thyroid was abnormal in twelve cases; the sex glands were pathologic in nine; the suprarenal in three, and the pancreas in two.

Our own case showed pituitary, suprarenal and ovarian pathologic changes. It is of interest from a clinical standpoint to note that the condition is five times more prevalent in the female and that most cases develop after the age of 35.

In view of the recent work on the tuber cinereum (Bailey and Bremer,[14] Camus and Roussy[15]), serial section study of this region was done. Nothing was found that could throw light on the etiology of the disease. The occurrence of fairly recent hemorrhages in the vicinity of the tuber cinereum and in the pituitary body may be evidence of the hemorrhagic tendency so frequent in this disease.

Dercum originally attributed the condition to a dysthyroidia which caused a reduction of fat combustion and inflammatory changes of the nerves. Since then other theories have also been advanced; viz., that it is a chronic intoxication of endogenous origin. Others believe the pituitary body at fault, while still others are of the opinion that it is a pluriglandular affection. Strübing[16] and Thimm[17] theorized on a trophoneurosis.

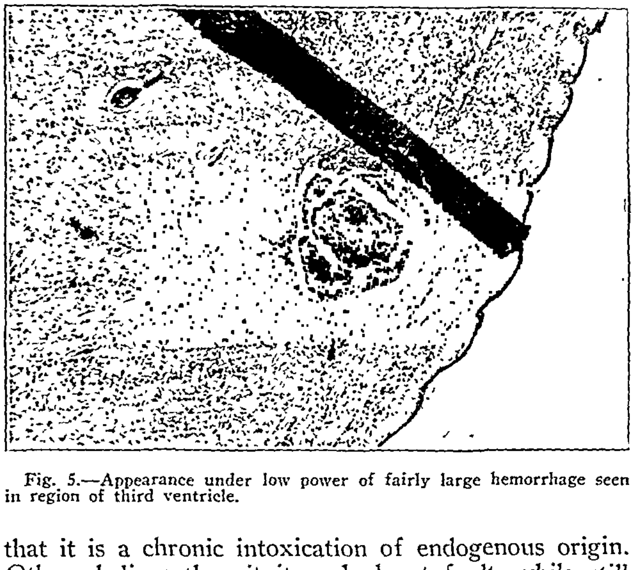

Fig. 5.—Appearance under low power of fairly large hemorrhage seen in region of third ventricle.

The relation of the other forms of obesity to Dercum's disease has been dwelt on by several, including Lyon[18] McCarthy and Karsner.[19]

Falta[11] believes that the changes in the ductless glands are accidental or coincidental. From a study of one case, no definite deductions can be made, but with three of the glands of internal secretion diseased, and knowing that there is an interrelationship between all the ductless glands, we feel that the pluriglandular hypothesis is best suited to explain the syndrome.

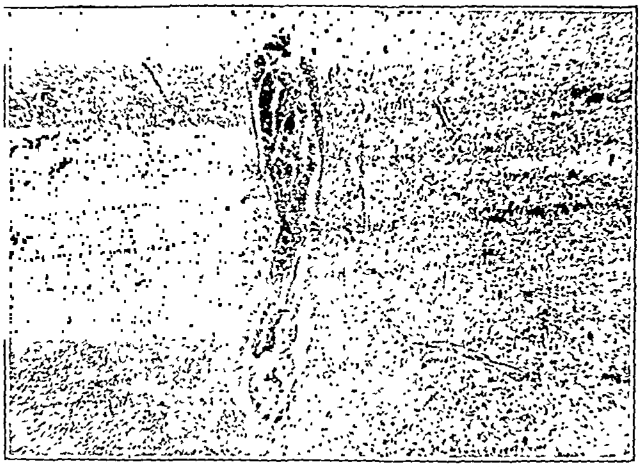

Fig. 6.—Appearance under low power of fairly large hemorrhage seen in region of third ventricle.

SUMMARY

1. The case of adiposis dolorosa that we report was quite typical clinically.
2. Pathologically, there was enlargement of the sella turcica with an adenomatous growth in the pituitary, recent petechial hemorrhages in the region of the third ventricle, and adenoma of the left suprarenal, and atrophic ovaries.
3. The theory of endocrine malfunction seems best suited to explain the symptoms in this case.

319 South Eighteenth Street—589 Delaware Avenue.

ABSTRACT OF DISCUSSION

Dr. Walter Timme, New York: We have seen in our clinic at the Neurological Institute a few cases of Dercum's disease in the last six or seven years, none of which have, so far as we know, come to necropsy. Yet the cases that we see fall so definitely into a type of a well marked pleuriglandular syndrome that we have come to look on them as belonging to this group. Practically all our cases show on roentgen-ray examination a large thymus, and the history of the cases shows an original thymus or hypoplastic state dating from puberty, even antedating puberty. Because they are not only extremely fatigable and backward, not necessarily from a mental but from a biochemical point of view, the picture can hardly be mistaken. They show a small blood vessel system and a small cardiovascular system. The fundus of the eye shows very small vessels; the blood pressure is usually low. There is an enlargement of the spleen but hypoplasia of other organs. This is of extreme importance in diagnosis, especially the notably small suprarenal, thyroid and the pituitary glands. In the course of a probable compensatory process, which brings these cases after a while toward normality (even if they don't reach it), these hypoplastic structures tend to become hyperplastic or overactive, with occasional formation of adenomas. Several patients belonging to this group (not merely Dercum's disease) have been operated on for pituitary and thyroid adenomas. Many of them in the course of their progress give histories of hemorrhages, occasionally into the central nervous system, and show definite signs of such lesions. Occasionally, after lethal termination, hemorrhages are found in the suprarenals and in the ventricles of the brain, the arteries of the ventricles, particularly, being subject to such hemorrhagic insults. Those hemorrhages are due partly to a hypoplasia of the arterial walls, readily permitting such results. Occasionally these hemorrhages give no manifestations. It sometimes happens that the pituitary is involved and enlarges; these cases give pituitary disturbance later in life. Occasionally, it is the thyroid that gives symptoms as the cases progress, or the suprarenals may bring on disturbances. Hence, there is no unanimity as regards the pathology of a finished case, because of the fact that any one or all three of these organs are engaged in the compensatory process. In the case presented by Dr. Eckel, we have the hemorrhages, the adenomas, the pituitary involvement and the suprarenal involvement. But they all began from an original hypoplastic condition, the emergence from which is shown by the manifestations of the particular gland at fault.

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[14] Bailey, Percival; and Bremer, Fritz: Experimental Diabetes Insipidus, Arch. Int. Med. **28**: 773 (Dec.) 1921.

[15] Camus, J., and Roussy, G.: Pituitary Syndromes, Rev. neurol. **38**: 622 (June) 1922.

[16] Strübing: Ueber Adiposis dolorosa und das Oedème blanc und bleu, Arch. f. Dermat. u. Syph. **59**: 171, 1902.

[17] Thimm: Adiposis dolorosa und schmerzhafte symptomatische Lipome, Montsh. f. prakt. Dermat. **36**: 281, 1903.

[18] Lyon, I. P.: Adiposis and Lipomatosis, Arch. Int. Med. **6**: 28 (July) 1910.

[19] McCarthy, D. J., and Karsner, H. T.: Adenocarcinoma of the Thyroid with Metastasis to the Cervical Glands and Pituitary: A Contribution to the Pathology of Abdominal Fat Formation, Am. J. M. Sc. **144**: 834, 1912.

Dr. **Theodore Diller**, Pittsburgh: In 1886 and 1887, I was a resident physician at Blockley Hospital, and at that time, serving under Dr. Dercum, I saw the first case that he described, which has become a classic in literature. I remember the patient distinctly, and I wish to pay a tribute to Dr. Dercum for his skill in describing this case I remember well the weblike appearance that the patient presented when she held out her arms; it was a case with no name until Dercum came along. This disease is an illustration of many rare ones that occur in neurology; having seen one, a person could not fail to recognize another if he saw it. It so happens that in my experience of nearly forty years in neurology, I have seen only one other case and that was about twenty years ago. I see this woman from time to time. She has not such a marked case, but it seems about stationary. She is neurasthenic, has fatigability, and all the symptoms that Dr. Timme has been speaking about.

Dr. **J. D. McCarthy**, Philadelphia: No mention was made in the record of the pathology and description of this case of the underlying diagnostic factor in this group of cases. In the Dercum group of cases, as differentiated from the other pathologic fat conditions, one finds, if he studies the fat under microscopic slides, evidence of a peripheral neuritis of the nerve filaments, going into tumors in the fat tissues. The fatty masses are encapsulated and there is also a condition of increased vascularity. I was surprised to hear Dr. Timme say that he has seen so many of these cases, because in the Philadelphia General Hospital in the last thirty years there probably have not been more than three or four of these cases, with the tremendous amount of material that we have, that have come to necropsy. We have, however, a large number of conditions of pathologic fat, which we do not consider as adiposis dolorosa. Many of these cases look very much like the case that was shown here, with tremendous masses of fat in the abdomen: more particularly when the patients get to the point at which they are bedridden, there is what one might term an increase in vascularization, and the fat tissue of the abdomen becomes infiltrated and tender. But that is not what Dercum or what I would consider a case of adiposis dolorosa. A case of adiposis dolorosa would be one in which there was pain at times, tendency of the fat to swell in localized areas at times, and these areas extremely tender to touch during the periods of congestion, at other times ordinarily tender, and associated with the endocrine changes that Dr. Timme and that Dr. Winkelman have found in this case. I think that the case I reported, with Dr. Burr, was one of the first cases in this group in which an endocrine association was reported, and that antedated Froelich's association of the gonads with pituitary disturbance. In that paper, the association of the ovarian function with the pituitary function and with secondary thyroid condition was very definitely pointed out. This was the first suggestion of the sexual influence of the pituitary, and the relation of the pituitary to sex development. That, I think, was possibly the second or the third case reported, and I believe it was the second necropsy. In the first necropsy by Dr. Dercum, as I remember, the pituitary, the thyroid or endocrine systems were not studied, but in our first case we found definite lesions of the endocrine system; in the cases reported by Dr. Burr and myself, the lesions were just exactly like the lesions reported in this case, adenomas of the pituitary and sclerosis of the thyroid, associated with ovarian disease. I do not see definitely how one can link these cases up, without pathologic findings, with a thymus condition. I think these cases show manifestation of disturbed metabolism due, as Dr. Timme has pointed out, not only to lesion of the pituitary but to a pleuriglandular condition, in which the pituitary might have been the primary lesion, but in which these other glands became secondarily involved. Any other assumption must be pure theory.

Dr. **J. L. Eckel**, Buffalo: There is just one question I wish to answer in closing, and that is regarding the pathologic examination of the nodular fat. The necropsy physician did not remove any of the fat for our analysis, and we had no opportunity to get it.

URINARY CALCULI

CHEMICAL COMPOSITION AND STRUCTURE IN RELATION TO RADIOGRAPHY *

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HARTFORD, CONN.

Since the advent of radiology, urology has made a remarkable advance toward more accurate diagnosis. In the earliest days of radiology it was considered quite sufficient if the shadow of a stone could be demonstrated; but during the last few years, through accumulated experience, more perfect technic and the introduction of pyelography, the roentgen ray has become a necessary adjunct to the study of urologic conditions. It is an accepted fact that there is a certain percentage of urinary calculi that fail to cast shadows on a roentgen-ray plate. For years a positive roentgenogram has been of value, but we still encounter

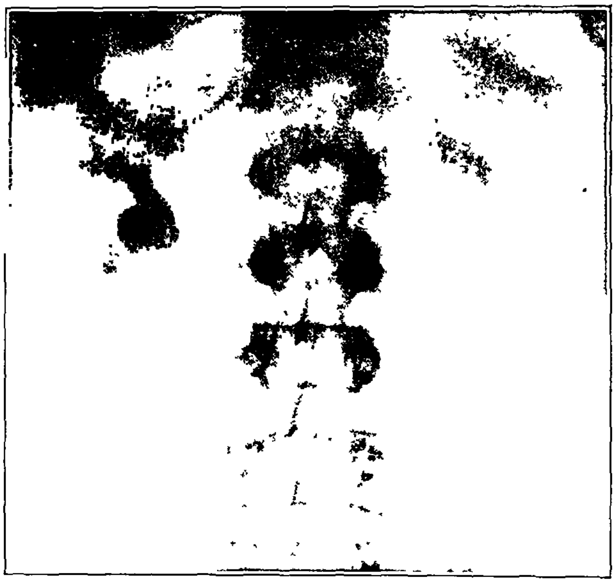

Fig 1.—Several calculi of same constituents: Density of shadow in stones within may be noted, neosilvol solution, calculi were positive to ordinary roentgen ray

cases in which a negative result does not always mean absence of urinary calculi. Too often, indeed, has it occurred, after the removal of urinary calculi which had previously been demonstrated by the roentgen ray, that the patient has had a ureteral colic before leaving the hospital and very often has passed another stone. Recent medical literature is rich with contributions on the so-called "recurrent urinary calculi," many of which were undoubtedly present but not discovered at a previous operation.

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* Read before the Section on Urology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925

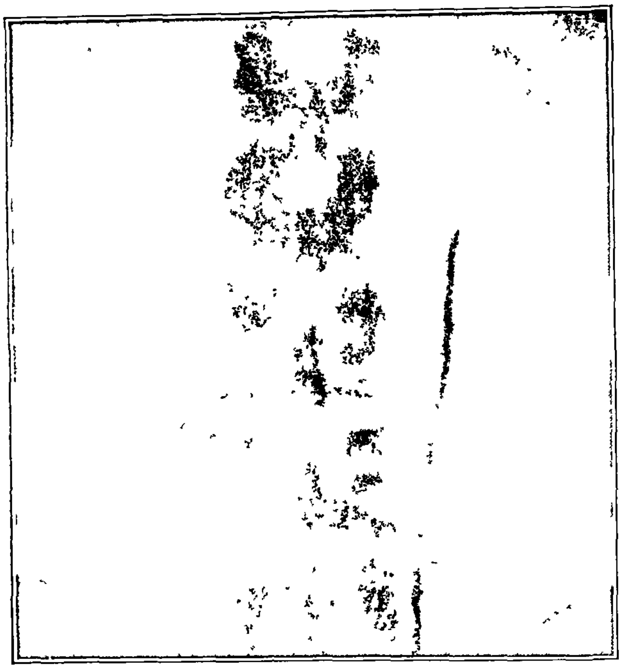
Fig. 2 —Two calculi in same kidney Good density of shadow in larger stone as a result of a large amount of calcium, small calculus is uric acid with some calcium.

Frequently, during the course of a urologic examination, the ureteral catheter meets an obstruction, and with negative roentgen-ray findings, ureteral stricture is considered proved by many, instead of merely suggested, and no further search is instituted for urinary calculi.

Finally, there are still those physicians in practice who rely on the roentgen ray entirely for the diagnosis of urinary calculi, notwithstanding the fact that there are few cities that do not have at least one physician who is trained in the use of the cystoscope, or if not, that such a physician is located within the radius of a very few miles.

Many investigators have written on the chemical composition of urinary calculi, and in nearly all the earlier works the authors considered uric acid and urates as the most important constituents of urinary stones. A review of the literature points out the fact that various authors differ as to the percentage of calculi containing these constituents. Thompson-Walker notes that out of 649 urinary calculi in the Hunterian Museum which were examined by Beneki, 74 per cent. contained uric acid or urates. Dickinson, during the examination of ninety-one renal stones, found uric acid or urates present in 70 per cent. Further examination showed that 63 per cent. of them contained calcium oxalate. On the other hand, Kuster found uric acid and urates to be present in only 3 per cent. of a series of 511 renal stones. In this same series phosphate was present in 31 per cent., while oxalate was found in 22 per cent.; xanthin was present in 3 per cent. of this series. Ultzman, in a series of 545 stones examined, found uric acid in 81 per cent., calcium oxalate in 5.6 per cent., and phosphate in 1.4 per cent. Bence-Jones asserts that 75 per cent. of all renal calculi are uric acid. Rosenbloom and Kahn report that in one series of twenty-six stones the majority were composed of calcium oxalate; and later, the same authors report a second series of twenty-six stones, all of which contained oxalates, 66 per cent. of them containing over 60 per cent. of oxalate. Moore has examined twenty-one stones from kidney and ureter and found that 70 per cent. of them contained oxalate. Morris, in a series of seventy-seven stones, gives the following figures: calcium oxalate, 44.15 per cent.; uric acid, 22.07 per cent.; phosphate, 16 per cent. White of London, in a recent article, records that, in a series of twenty-four renal stones investigated, 75 per cent. contained calcium oxalate and 58 per cent. calcium phosphate. In eleven of these stones (45 per cent.) some proportion of uric acid was detected, but in all of them calcium oxalate or calcium phosphate was also present.

In the preceding figures there is a large variation in the results obtained by the different investigators. This can be accounted for because: 1. Some of the authors included in their series several stones removed from the same bladder and having the same composition. 2. In the investigations in several instances, only the incidence of one or more constituents was sought, the other elements in the stone being disregarded. However, it is noted that the later investigators found more oxalates than their predecessors.

In presenting this article it is not my intention to carry on further investigations as to the composition of urinary calculi in general, but rather to consider those stones that have been negative to the roentgen ray. It has been previously shown by various authors that certain calculi have a greater opacity than others,

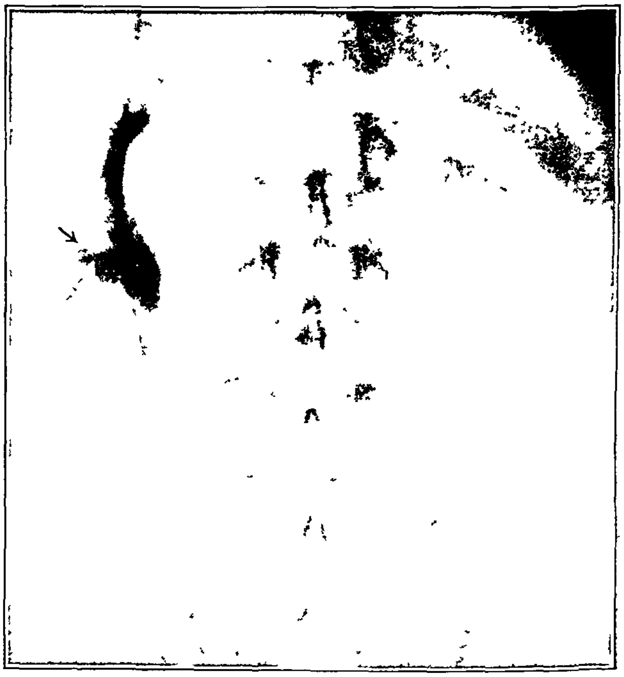
Fig 3 —Small calculus located in pelvis: Stone was composed of uric acid and was negative to ordinary roentgen ray

and also that the constituents of those stones are directly responsible for the type of shadow shown in the roentgenogram. In the two series of cases presented, roentgenograms having been negative, other means were used in the diagnosis of calculi.

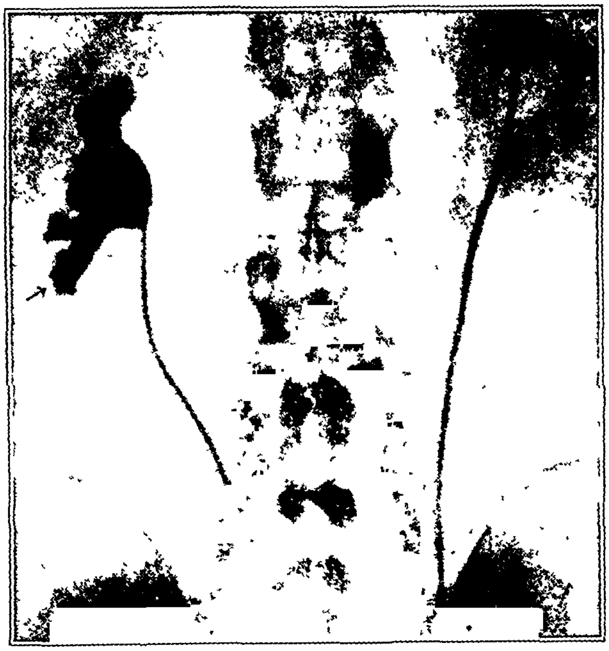

Fig. 4.—Calculus located in the lower calix: Constituents were uric acid and urate; negative before pyelography.

In considering the density of calculi, and in comparing the relative shadows cast by stones that differ in composition, there are several factors to be taken into consideration. It is known that the photographic effects of rays vary. Soft rays produce relatively too great, and hard rays relatively too little, effect on the photographic film. Irregularities of the film, secondary radiation, and exposure to heterogeneous rays are also disturbing factors. Under similar conditions the results obtained will be alike. Attempts have been made, however, to compare the relative opacity of different calculi submitted to rays at different times, varying degrees of exposure being used, and, in several instances, different apparatus. Naturally, under such conditions, no accurate conclusion could be formed.

There are certain accepted standards of radiography, proved by various investigators, as to the capacity of different bodies to absorb the rays and also the factors that affect this capacity. Some of these standards, as stated by Benoist, are as follows:

1. The specific opacity of a body for a given quality of roentgen rays and for a standard measured thickness is independent of the physical state of that body. This means that the same transparency of a body will be obtained whether it is in a solid or a liquid state.
2. The specific opacity of a body is independent of the method of grouping of its atoms or molecules.
3. The specific opacity of a body is independent of the combination of its atoms.
4. The specific opacity of a substance depends on its atomic weight.

Therefore, as a urinary calculus is composed of a number of constituents, each constituent having a different degree of opacity, then the opacity of the calculus will be equal to the total opacities of its constituents.

Table 1 contains a list of elements tabulated according to their atomic weights and also shows their absorption coefficients. A study of the table will tend to impress the fact that there is indeed a true relationship between the atomic weight and the absorption coefficient, although at present there is no accepted formula connecting these values.. It is noticeable that the opacity increases relatively much more slowly with the atomic weight in the lighter elements than in the heavy elements. Table 2 is a list of the simple constituents composing urinary calculi, arranged according to their atomic weights, and, necessarily, according to their increasing density.

Table 1.—*Relation Between Atomic Weight and Absorption Coefficient*

Element	Approximate Atomic Weight	Absorption Coefficient
Hydrogen	1	0.05
Oxygen	16	0.9
Sodium	23	1.9
Aluminum	27	3.4
Potassium	39	11.1
Calcium	40	14.4
Bromin	80	154.0
Silver	108	300.0
Iodin	127	315.0
Lead	207	569.0

Table 2—*Components of Urinary Calculi*

Hydrogen	1	Sodium	23	Sulphur	32
Carbon	12	Magnesium	24	Potassium	39
Nitrogen	14	Phosphorus	31	Calcium	40
Oxygen	16				

Combinations of the substances in Table 2 may be arranged in the same manner according to the sum of their atomic weights, and will be found to be in direct relationship to their opacity.

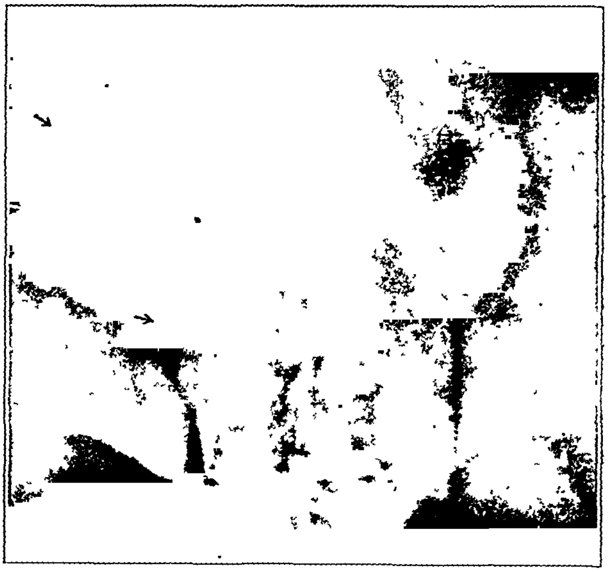

Fig. 5—Calculi of pelvis and ureter: Ureteral calculus composed of uric acid is prevented from entering bladder by stricture.

From Tables 1 and 2 one can understand why the soft parts of the body give such a poor shadow. These parts are composed of combinations of organic substances that are composed of hydrogen, carbon, nitrogen and oxygen, all of which have very low atomic weights.

OPACITY OF CALCULI

In considering the opacity of urinary calculi, we must bear in mind that the construction of the stone also plays an important part in its density. For instance, the medullary portion of a stone may be composed entirely of uric acid, and if the outer layers are poor in calcium salts or substance of heavy atomic weight, the shadow cast will be very weak, or even negative on the film. Then, again, the actual thickness of a stone will have a bearing on the type of shadow cast, although, as stated before, the larger of two stones will not necessarily reproduce the heaviest shadow, depending on the composition and the atomic weights of the constituents. Another factor in determining the opacity of a stone is its structure and, incidentally, its position, which affects the structure. That is, a stone located in a cavity or embedded in soft tissue has greater possibility for expansion than a stone that is having pressure applied on it by surrounding tissue. Thus, the first stone is more likely to be of a porous structure and will cast a shadow that is less dense than the compact calculus. In the case of the porous structure, the moisture absorbed undoubtedly plays some part in its density; because in several instances, bladder stones that had cast no shadow before removal, after dehydration had taken place, were positive to the roentgen ray, even in a pulverized condition. Therefore, we may consider that the opacity of a stone is governed by the arrangement of its constituents, by its thickness and by its structure.

Arcelin, in a comparative study of calculi, arranged a number of stones each cut to a thickness of 4 mm. on a plate, and exposed them to the roentgen rays. On examination he found the stones to be composed of the following constituents in the order of their opacity: calcium phosphate, casting the densest shadow; calcium oxalate; calcium and magnesium phosphate; ammonio-magnesium phosphate; calcium and magnesium urate; uric acid.

White, in a similar investigation, cut into cubes, each 5 mm. in thickness, stones that had previously been analyzed. The results obtained are as follows: calcium phosphate; calcium oxalate; cystin with a small amount of calcium; mixed urates; triple phosphate with a trace of calcium; xanthin with a trace of calcium; uric acid.

Table 3.—*Results in Keyes' Series of Cases*

	Positive	Erroneously Negative
Renal pelvis	32	6
Ureter	20	14
Bladder	16	12

The foregoing experiments resulted in shadows that were in conformity with the relative molecular weights and satisfy the standards of Benoist.

URINARY CALCULI UNDER DISCUSSION

As stated before, it is an accepted fact that a certain percentage of urinary calculi are negative to radiography. Keyes, in a consecutive series of cases in which stones were present, found the results given in Table 3.

After the ordinary radiography has failed to disclose stones of the urinary tract, in the presence of subjective symptoms we have several avenues of investigation. We have first of all the cystoscopic examination, which will disclose all vesical calculi, regardless of composition. For calculi of the upper urinary tract, we have the waxed tip catheter. This method in itself is liable to error, since markings on the wax are often received from other sources than stones during the operation. Finally, there is urography, which in several instances caused a previously negative stone to produce a shadow on the roentgen-ray film.

In the series of bladder cases presented in Table 4, roentgen-ray examination for stone was negative. In each case the diagnosis was made by use of the cystoscope. This series does not include stones positive to the roentgen ray.

Table 4.—*Vesical Calculi Negative to the Roentgen Ray*

Patient	Age	Duration of Symptoms	Roentgen-*Ray* Findings	Cystoscopic Findings	*Composition* of Stone
1. C F. O.*	65	5 years	Negative	Positive	Uric acid; trace of phosphatic deposit
2. G. F. S..	40	6 months	Negative	Positive	Urate, and phosphatic deposit
3. J. M.†...	55	No symptoms	Negative	Positive	Xanthin; very slight trace of calcium; phosphatic deposit
4. T. F. N..	60	1 year	Negative	Positive	Uric acid; trace of phosphatic deposit
5. J. P.‡....	48	2 years	Negative	Positive	Uric acid; trace of phosphatic deposit
6. F. R.....	50	8 months	Negative	Positive	Uric acid; trace of phosphatic deposit
7. D. F. H..	51	4 months	Nega*tive*	Posi*tive*	Uric acid; trace of *phosphatic deposit*

* Patient also had four small calculi in the membranous urethra.

† Patient had symptoms of prostatic obstruction for a period of two years.

‡ Patient gave a history of stricture for three years.

A study of Table 4 will show that in no case was the roentgenogram positive. However, in the case of the xanthin stone, there was a suspicious shadow, not unlike a defect in the film, present, although no positive diagnosis was made. This stone was located behind an enlarged prostate, and there is a possibility that it would have been revealed if it had been located in the bladder.

Age.—All the patients were of such age as might lead one to suspect pathologic changes of the lower urinary tract.

Accompanying Pathologic Changes.—It is noticeable in this series that there were some pathologic changes, such as stricture of the urethra and enlargement of the prostate. This was also true in cases not included in this paper; undoubtedly many vesical calculi are passed through the urethra while still very small, unless there is some obstruction at the bladder neck. The exceptions are those included in a diverticulum or encrusted on the bladder wall.

Chemical Composition.—All the stones were composed of uric acid or urates, which are the constituents found in previous experiments. Xanthin, with a very slight trace of calcium, was the sole exception. Failure to photograph in this case was undoubtedly largely due to the position of the stone behind the prostatic enlargement. All the stones were coated by a thin film of phosphatic deposit. Other vesical calculi examined but not included here had a similar coating but of very much greater thickness and were positive to the roentgen ray.

RENAL CALCULI

A discussion of renal calculi would necessarily include those located in the ureter as well as in the pelvis and kidney substance. Consequently, a diagnosis of a calculus located in the parenchyma is well nigh impossible without the roentgen ray. If the composition of the stone is such as to render opacity difficult, it may be possible to miss it even with repeated examinations.

TABLE 5.—*Renal Calculi Negative to the Roentgen Ray*

Patient	Age	Location of Calculi	Roentgen-Ray Findings	Diagnosis by	Composition
8. M. K....	26	Pelvis	Negative	Pyelogram	Uric acid; trace of earthy and triple phosphate
9. H. N. P.	34	Pelvis	Negative	Pyelogram	Uric acid; trace of urate; thin line of calcium oxalate
10. C. F. G.	32	Ureter	Negative	Waxed tip catheter and urethrogram	Uric acid; triple phosphate
11. C. H....	27	Ureter	Negative	Waxed tip catheter and urethrogram	Urate; trace of oxalate
12. M. F. S.	37	Pelvis	Negative	Pyelogram	Uric acid; triple phosphate
13. F. C....	29	Pelvis	Negative	Pyelogram	Uric acid; urate; trace of oxalate
14. G. S.....	33	Pelvis or ureter	Negative	Passed by urethra	Uric acid; triple phosphate
15. D. F....	30	Pelvis or ureter	Negative	Passed by urethra	Uric acid; triple phosphate.
16. C. A....	33	Pelvis or ureter	Negative	Passed by urethra	Urate; trace of phosphate

In this series, the roentgen-ray findings were negative in every case. In six of the cases a diagnosis was completed with the aid of urography. The agents used were 20 per cent. neosilvol or sodium iodid solution, 12 per cent. Without entering into a discussion as to the relative merits of either medium, I would say that in routine urography the neosilvol solution seemed to be less irritating. In all cases the measure was used as a routine. In the last three cases no diagnosis was made, but within seventy-two hours after examination the calculi were passed by the urethra.

Uric acid and urates in this series were also the chief constituents. In no case was there any marked infection, nor was there any decrease in the excretory function of the kidney. Undoubtedly, if the calculi had not been discovered at the time of examination they would have increased in size and, in the presence of infection, accumulated other urinary salts of a greater atomic weight, so that later roentgenograms would have shown a shadow. All the foregoing calculi were doubtless in the process of early formation and within a short time would have taken on the calcium salts which are the common constituents of kidney and ureter stones.

CONCLUSIONS

1. The relative opacity of a urinary calculus depends on the total molecular or atomic weights of its constituents and is influenced by its structure and thickness.
2. Some urinary calculi having constituents of low atomic weights are negative to the roentgen ray. These include stones composed of uric acid, urates and triple phosphate.
3. The diagnosis of urinary calculi should not be guided entirely by radiographic reports.
4. Cystoscopy and urography are very necessary as well as valuable adjuncts in the diagnosis of urinary calculi.

750 Main Street.

IMPACTED CALCULI OF THE URETER

TREATMENT EMPLOYED AND RESULTS OBTAINED IN SIXTY CASES *

ALEXANDER HAMILTON PEACOCK, M.D.
SEATTLE

This paper comprises a study of sixty cases of calculi that have left the kidney and become impacted in various levels of the ureter. While these cases do not form a large group, the study of them may bring out some interesting information relative to their disposition and the subsequent findings. All occurred in private practice. It is my purpose in this study to show the pathology, the symptoms, and the various forms of treatment for them, with a particular view of arriving at the best end-results. It is the impacted calculus in which we are particularly interested. Those which rapidly descend the ureter will not be considered. A number will lodge temporarily in the ureter, and then pass on into the bladder; these also are excluded. Only those which, after repeated attacks of ureteral colic, fail to move downward will be termed impacted.

ORIGIN

All ureteral stones are primarily renal. They form in the calices as a result of stasis, and the deposit of precipitated urinary salts, with pus or bacteria as a nucleus. In a large percentage of this series, the staphylococcus is present. When one sees a patient whose urine is loaded with staphylococci, immediately one should become suspicious of the presence of calculi somewhere along the urinary tract. Bacilli of the colon groups occur much less often. A calculus once formed may remain a renal stone or may become dislodged, drop into the renal pelvis, and slip down the ureter. It may reach the bladder in a few hours, or remain in the ureter for years.

PATHOLOGY

Assuming that the majority of these calculi are formed in the presence of bacteria, it is not unnatural to find a pyelitis present. This catarrhal inflammation of the pelvic mucosa does not end abruptly at the pelvic ureteral junction but extends down the lumen of the ureter. It is a continuous membrane and subject to the same infection as the pelvis. This is a point rather important to consider; namely, that there is a mild inflammatory process going on in the mucosa of the ureter. To complicate the passage of the calculus, then, we often have, first, a ureteritis, presenting inflammatory changes, irritable and easily traumatized. Continued any length of time, this could easily develop into a ureteral stricture. When Hunner first called attention to frequency of ureteral stricture, he was doubted and discredited. Today, we all know the frequency of this condition. As far back as 1902, Howard Kelly [1] wrote: "Obstruction is the generic term for any hindrance to the downflow of the urine, while stricture is specific in its designation, being limited to intrinsic narrowings due to disease of the ureteral walls. . . . Strictures are caused by an inflammation in the ureteral walls produced by commoner pyogenic cocci, by the gonococcus, and by the tubercle bacilli." When the pathology is understood, it is not so difficult to see just why some ureteral calculi become impacted. They may lodge against a stricture, and no hydrostatic or peristaltic force behind them would ever propel them into the ureter. These strictures may involve only the mucosa and the submucosa, or they may extend throughout all the structures of the ureter, and even cause periureteritis. In one case the thickness of the ureteral wall was normal except at the point of the stricture, where it measured 1 cm. from lumen to periphery. For familiar examples, let us recall the various types of strictures found in the male urethra. Certain classic points for stricture of the ureter have been described by Kelly; namely, the ureteropelvic junction, the place of crossing of the ureter over the iliac artery as it drops into the pelvis through the broad ligament in women, and the ampulla of the ureter in the bladder wall. In my experience, strictures occur anywhere along the ureter.

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* Read before the Section on Urology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

[1] Kelly, H. A.: Stricture of the Ureter, J. A. M. A. **39**: 363-369 (Aug. 16) 1902.

It is now recognized that bacteria play an important rôle in the formation of renal calculi, because of their common occurrence in bone suppuration and chronic infection of the urinary tract. In this group, I found the various types of *B. coli-communis, Staphylococcus aureus* and *albus, Bacillus catarrhalis,* and the tubercle bacillus. One group of bacteria may be found alone, or they may be found in combination. The commonest is the colon bacillus and the staphylococcus. The presence of these bacteria were ascertained by smears of sediment taken from the kidney or ureters, and by cultures. It is a commonly known phenomenon that chronic cystitis with obstruction very frequently results in vesicle calculus, due to stasis, and obstruction to the outflow of urine. When the same conditions are present to a lesser degree in the calix and pelvis of the kidney, it is not unnatural to find the same formation taking place. It is also found that with many of these cases, a pyelitis is also present. The absence of bacteria at the time of the examination does not exclude the bacterial origin, as a pyelitis may have existed at the time the calculi were formed and subsequently cleared up.

In the cases here considered, 48 per cent. did not show bacteria at the time of examination, 27 per cent. showed staphylococcus present, 20 per cent. showed staphylococcus with colon bacilli, 4.5 per cent. showed colon bacilli, and 0.5 per cent. showed tubercle bacilli. This shows the great preponderance of the staphylococcus as it occurred singly and in combination in 47.5 per cent. of all the stone cases.

Presence of Pus.—With bacteria present, it is evident on examination that pus is apt to occur, and we find it occurring in 80 per cent. of the cases, while 20 per cent. are negative for pus or pus cells.

Hematuria.—When the microscopic character of these calculi is recalled, being composed of crystals with sharp edges, it is not unnatural that we should find blood or red corpuscles in the urine. In fact, a severe renal colic, accompanied by red corpuscles in the urine, is proof enough of the presence of a calculus, whether it is ever found or not. On making the examination, this history becomes an important finding. Seventy-three per cent. of the patients gave a history of hematuria, while 27 per cent. had no record of bleeding. In 94 per cent. of the cases, red corpuscles were found by microscopic examination. This examination should never be overlooked.

Size.—The calculi varied from 3 to 30 mm. in length. In averaging up the calculi, only the length will be considered. The average length was 8.7 mm. Those which were found at operation were mostly rough and adherent to the delicate wall of the ureter.

LOCATION

The location of the calculi in the ureter is most interesting. Seventy-six per cent. of the stones were in the lower third of the ureter, 19 per cent. in the upper third, and 5 per cent. in the middle third. It has been taught for many years that there were certain constricted portions of the ureter: namely, the ureteral pelvic junction at the brim of the pelvis, at the point in the female where the ureter traverses the broad ligament, and at the ampulla of the ureter where it joins the bladder. This I believe to be incorrect. Calculi may be impacted in any portion of the urethra. However, by far the most prevalent point is in the lower third, that portion of the ureter which runs subcutaneously into the bladder, where it is naturally protected by constricting muscle which tends to prevent regurgitation up the ureter. This location offers a strong resistance to the passage of the calculi which are descending toward the bladder. We are not surprised, therefore, to find 76 per cent. of the calculi in this portion of the ureter, where the ureter is large and elastic, and expands readily. Nineteen per cent. were lodged in the upper third. These calculi were dropped into the ureter from the pelvis, and the tube would not expand and allow them to pass farther on.

CHRONOLOGY

One of the most interesting facts brought to light was the average duration of these calculi in the ureter before they came to operation and relief. The average time of the cases we are considering was nine years. It is well known to urologists that these patients have been operated on for every imaginable condition excepting the calculus present. Every physician could recite many such instances. I shall mention just one:

A man, aged 49, had suffered with pain in his right side for nine years. It was a typical renal colic radiating into the testis. The appearance of blood was present in the urine. The patient had had four major operations: an appendectomy, two for the removal of intestinal adhesions, and a nephrotomy. The kidney had been searched for a calculus. A roentgenogram showed shadows in the upper right abdomen, which proved to be gallstones. A film of the lower urinary tract revealed a calculus in the middle third of the ureter. Catheterization of this side showed a very definite obstruction and very little urinary function. The calculus was removed by an extraperitoneal ureterolithotomy, and the pains of the last seven years have been entirely relieved.

The average distance from the bladder of the stones was 8.5 cm.

In 68 per cent. of the cases, delayed function was observed. In 12 per cent., there was a total obstruction and no kidney function. In 20 per cent., there was no impairment of the renal function noted by the phenolsulphonephthalein test.

SYMPTOMS

The youngest patient was 23 years old, the oldest patient 70, and the average age was 43. The greatest number of cases occurred between the ages of 30 and 50. Ages from 20 to 29 contained 13 per cent. of the cases; from 30 to 39 years, 34 per cent.; from 50 to 59 years, 13 per cent.; from 60 to 69 years, 8 per cent., and 70 years and over, less than 1 per cent. In other words, impacted calculi seem to cause a disease similar to gallstones, largely involving those in middle life. This may be due to overeating, sluggish habits, and the result of infection.

It was found that 96 per cent. of the calculi were solitary, the remainder showing two or three impacted calculi. These figures do not take in other renal calculi which have been passed previously.

ROENTGENOGRAMS

Demonstrations of ureteral calculi by roentgenograms are largely a question of fine roentgen-ray technic. The gas in the alimentary canal should be gotten rid of to avoid a covering of the stone with a gas cloud. The results with compression are better than those without it. Absence of all motion within the abdomen is important, as blurring has spoiled many a picture. The roentgen ray gave positive shadows in 72 per cent. of the cases. The remainder were diagnosed by means of clinical symptoms, the wax tipped bougie, and obstruction to the catheter. A catheter meeting a definite obstruction, with pathologic urine or no urinary secretion at all, always gives a splendid clue as to the point of trouble in the ureter. By counting off the centimeters on the catheter and then examining the film, we are often able to point out the calculus which would have otherwise been overlooked, as it sometimes lies behind a transverse process. Next to the ureteral catheter, the roentgenogram is the most valuable diagnostic aid.

SEX

About 80 per cent. of the patients were males, while only 20 per cent. were females. This difference is hard to explain. It is possibly due to the more vigorous life of the male, and his greater exposure to the various infections, injuries and traumatisms.

PAIN

The pain of the impacted calculi has a dual character. First comes the classic colic, very intense and conveying pain impulses along the course of the ureter, and the occurrence of sympathetic pains allied with it, as in the bladder, testes and kidney. It is produced by temporary obstruction and the painful peristaltic waves driven against the impacted calculus. This pain backs up into the kidney; after a time, the patient experiences a throbbing sensation; vomiting frequently occurs. The patient becomes pale and frequently collapses. The attacks may occur at any hour of the day or night. As a rule, the calculus is moved a trifle and some urine escapes down the ureter, thus relieving the great tension back of it. The acute colic subsides and the pain is then a dull ache in the region of the kidney. At the point of constriction in the ureter, there is frequently marked tenderness. In addition to this, there may be pain in the bladder and irritation of that organ, producing frequency and some tenesmus. Often the pain is so severe as to simulate an acute abdominal lesion, and this explains why a number of these patients have been operated on for acute appendicitis. There was a definite pain of some character in the whole series of patients; none were free of pain, and it was for this symptom that they applied for examination and relief.

The character of the pain in 74 per cent. of the cases at the time of examination was mild. In 12 per cent., the pains were moderately severe; in 14 per cent., very severe. Sixty-eight per cent. of the patients had colic in both kidney and ureter, and 24 per cent. had uncomplicated ureteral colic. The interesting factor in these figures is the large percentage of ureteral calculi which produced a simple renal colic without pain in the ureter. This occurrence is a referred pain. It is illustrated by the following case:

A man, aged 49, had suffered for three years with periodic pain and colic in the region of the left kidney, accompanied with nausea and vomiting. He had no attack until sixteen months later, when he again had intense renal colic. Roentgenograms were taken many times but did not include the whole kidney, ureter, and bladder region. On cystoscopic examination, an obstruction was found in the left ureter, 3 cm. from the bladder. A roentgenogram of the pelvis revealed an impacted calculus measuring 10 by 22 mm. Had the pain been lower, or had there been ureteral colic, doubtless the physician would have taken a picture lower down.

This case illustrates the necessity of having all roentgenograms include the whole urologic tract. A number of calculi have been missed on account of this fault in technic.

Unilateral backache was noted in 90 per cent. As a rule, this was not severe and was best described as a dull ache or a heavy feeling. A rise of temperature of 1 or 2 degrees, accompanied by mild chills, was noted in 70 per cent. of the cases. This rise in temperature indicates an obstruction of the urine with the presence of infection. As soon as the obstruction was released, either by catheterization or by lithotomy, the temperature rapidly returned to normal.

NUMBER OF ATTACKS

The number of attacks of colic and pain varied from one to many, many being implied when the patient had lost count of the number of attacks. This comprised 40 per cent. of them. The remainder averaged from two to six attacks. There was no rule to govern this, but it was surprising how frequently a patient would go a number of years between attacks, and the calculi would not move. This is explained by the urine channeling the calculus.

TREATMENT

The treatment of the impacted calculus is always a problem. The patient wishes relief from the severe attacks of colic and the dull constant pain, which more or less incapacitates him, keeps him from pursuing his occupation and thereby cuts off his income. In the second place, the impacted calculus undoubtedly injures the ureter at the point of impaction, and beyond this point causes hydronephrosis. Dilatation of the pelvis and calices result, setting up or continuing infection of the mucous membrane. This, in time, is apt to progress to the stage of pyonephrosis, with partial or total destruction of the kidney gland. It is often demonstrated by high blood chemical findings and a poor phenolsulphonephthalein showing, which has been observed in these patients. A long impacted calculus is a menace to the patient's renal function, and consequently will shorten his life. The aim of the treatment will be to free the patient from the impaction in the ureter with as little trauma and shock as possible. It has been observed that many calculi, apparently impacted, will complete the journey to the bladder without operative intervention.

Our first procedure is the dilation of the lower third of the ureter. As mentioned before, the greatest number of obstructions takes place in that portion of the ureter in the bladder wall, and just beyond it. The most efficient cystoscope for dilation is the one of the operating type; where large catheters may be used, and the thrust of the catheter is almost a straight line, occasionally meatotomy of the ureteral opening will help. Caulk has reported a number of very successful dilations of the ureter by inserting additional catheters as the ureter is dilated. This is largely a matter of skill. I have found it advantageous at times to inject liquid petrolatum into the ureter. It at least coats the calculus with oil and helps to free the adhesions, and, in my opinion, has been an aid. In the present series, this method was successful in assisting the calculus into the bladder in 50 per cent. of the cases.

Those calculi which are frankly too large to descend into the bladder, and are tightly wedged and adherent to the wall, should be removed by operation. Those in the upper third of the ureter are best exposed by a lumbar incision, the ureter being picked up and the incision made just over the calculus. Those in the middle and lower third are best reached by an abdominal incision about 5 cm. inside and parallel with the inguinal fold, the skin, fascia and transversalis muscle being cut, the peritoneum pushed toward the median line, and the ureter located at the pelvic brim. There are several points in this technic that have been found useful. Frequently the ureter is large and embedded in the posterior wall of the peritoneum, to which it is firmly attached. Some have found difficulty in locating the ureter because it was hidden behind the peritoneal retractor. It is always wise not to strip the ureter too freely, upward or downward. Its blood supply consists of little twigs along its course, and the tearing of these will devitalize the ureter or cause bleeding. It has been found that the calculi impacted well down in the pelvis near the bladder are the most difficult of all. Here there may be a stricture or an inflammatory condition of the ureteral wall, so that it has been at times very difficult to palpate the calculus. It could not be felt through the thick ureteral wall. Another circumstance which has been experienced is that rarely do these impacted calculi free themselves so that they can be milked up the ureter into a more accessible point for delivery. They seem to be adherent to the mucosa, and their sharp crystals hold on very tenaciously. It is always better to open the ureter directly above the site of impaction.

As a rule, only the outer coat of the ureter was sutured. A rubber tube will take care of the draining, which is often beneficial to the kidney above. Some of the wounds will not leak urine at all following the operation; others as a rule close within two weeks' time.

In one patient, an extraperitoneal delivery was made, and in another patient the calculus was delivered through cystotomy. This was in a man, aged 42, with a uric acid calculus at the vesico-ureteral junction. It did not show in roentgenograms, but the cystoscope revealed the calculus with its nose projecting into the bladder. The calculus measured 30 mm. in length. The bladder was opened and the calculus was lifted out of the ureter. The patient had suffered for twenty-eight years, and had been operated on several times before to relieve his cystitis.

COMPLICATIONS

Strictures.—In 18 per cent. of the cases of ureterolithotomy, marked organized strictures were found. These strictures were divided and have since been followed up by dilations with catheters and bougies. The strictures are a very serious problem, as they have a tendency to close down and entirely shut off the flow of the urine.

A man, aged 49, who had an impacted calculus and stricture of the right ureter just beyond the bladder, was treated by extraperitoneal ureterolithotomy. The wound closed nicely. A month after operation, the ureter was dilated with a No. 5 catheter and the urine was found to be normal. Six months after the operation, the patient began to complain of pain in the bladder and soreness at the lower end of the ureter. All attempts to pass the point of stricture were unsuccessful. He complained of so much pain that nine months after the first operation the right kidney was explored. It was found to be of normal size, but a very blue, large pelvis, and the ureter under great pressure were discovered. Nephrectomy was decided as the only solution for the stricture, and since that time, the patient has enjoyed good health and has been free from pain.

Another patient, who had had a right sided colic for several years, came in for examination. A calculus was located 11 cm from the bladder. On account of repeated colic, and the inability of catheters to pass the stricture, a ureterolithotomy was performed. The interesting point observed in this patient was that two soft calculi were lifted out of the strictured ureter. At this portion of the ureter, there was considerable thickening, and extending about 4 cm., the walls were indurated and not compressible; above and below this point, the ureter was apparently normal. In this case, the stricture of the ureter was primary and the calculi were secondary.

Another complication of ureterolithotomy is the establishment of a uretero-abdominal fistula.

This occurred in a woman, aged 33, who had suffered from ureteral colic for six months. An impacted calculus was located in the right ureter 10 cm. from the bladder. The patient was submitted to dilation of the ureter, but nothing would dislodge the stone. A ureterolithotomy was performed, and a calculus 15 cm. long was found impacted against a stricture. After considerable difficulty, the calculus was lifted out of its bed and delivered. The walls of the ureter were thin and partly torn across. The tear was repaired with No. 0 plain catgut sutures. The patient made an easy convalescence but has drained urine ever since. All attempts to dilate the stricture have been without avail and no urine is passing this lower segment, either by the indigocarmen test or by catheter. The ureter was embedded in inflammatory tissue, making a repair out of the question, so nephrectomy was performed.

At times, the ureters are very delicate and will not stand a great deal of trauma. The bruises and scratches of the calculus, together with the incision, have a tendency to contract the lumen and permanently mar the tube. In the majority of cases, however, the ureter repairs rapidly and has not suffered from the operation.

OPERATIVE TECHNIC

Of first importance in operative technic is an accurate location of the impacted calculus. This, as I mentioned before, is accomplished by means of a ureteral catheter and the roentgenogram. It is my belief that many ureteral calculi have been missed by operators because of uncertainty of the exact level of the stone in the ureter not being determined beforehand. Frequently a patient will allow time to elapse between the examination and the operation, so a roentgenogram should be made the day before the operation. In the second place, the operative field should be divided into three zones: the upper, the lower, and the middle third.

1. The upper zone is best reached through a lumbar incision, going through Petit's triangle, pushing aside the perineal fat, and picking up the ureter on the psoas muscle. In this region the calculus is very readily

palpated. A stitch or two of fine catgut in the outer layer will hold the ureter together and a rubber tube of No. 20 French makes a serviceable drain.

2. The middle zone is best reached through an abdominal incision, 1 inch inside the anterior superior spine, and the tissues cut are the skin, the subcutaneous fascia, and some of the fibers of the transversalis muscle. A large, self retaining tractor is placed in the wound, and the brim of the pelvis is located. The first landmark is the external iliac artery, which can be felt with its strong pulsation: crossing this large vessel and dipping into the pelvis is the ureter. On account of the many changes in its caliber and the thickness of its walls, it will sometimes be difficult to recognize. If, however, its course is accurately known, much time and labor will be saved. Again reference is made to the roentgenogram, and the calculus can be located by comparing it to the bony structure, using the crest of the ilium as a guide.

3. The lower third is more difficult. Here the ureter dips abruptly away from the operator and traverses the deep structures of the pelvis. I often encounter a greatly thickened ureter, inflammatory tissue, and lymphatic glands, these making palpation of the calculus difficult. The lower portion of the ureter cannot be brought up into the wound and is not elastic; as the lower end is firmly fixed in the bladder, extra long retractors are necessary. The Cameron light has been found to be of great service. It can be slipped underneath the ureter, and transillumination of the stone is possible. Calculi near the bladder are invariably impacted and will not lend themselves to being dislodged or moved by milking. As a rule, time is saved by exposing the ureter all the way to the bladder and incising directly over the calculus. A transperitoneal exposure of the ureter is rarely indicated unless intra-abdominal work has first been performed and the calculus has been located secondarily. In closing up the wound, a drainage tube is always inserted.

SUMMARY

1. While many ureteral calculi will pass through the ureter and be safely conducted to the bladder, a number of them will become impacted in the ureter.

2. They are held in the ureter very often by such pathologic conditions as stricture, the size of the calculus, or the rough and crystal-like surface of the stone.

3. The impacted calculi often remain in the ureter for years, and in this series of cases the average length of time was nine years.

4. A calculus, once impacted, blocks off the urine, produces pain, pressure, dilatation of the ureter and renal pelvis, keeps up inflammation of the mucous membrane, and in time impairs the function of the kidney.

5. These impacted calculi cause the patient to suffer intermittent or continuous pain for years, constantly threatening him with colic; as a result, the general health is markedly impaired.

6. Stricture of the ureter plays a considerable rôle in the impaction of the calculi, being found in 18 per cent. of the cases.

7. Contrary to previous teaching, I have not found a normal constriction of the ureter except in the lower third, where the ureter travels through the bladder wall.

8. The staphylococcus plays an important rôle in the formation of the stones, as it was found in 47.5 per cent. of all the stone cases.

9. Hematuria, either as microscopic or as red corpuscles, occurred in 94 per cent. of the cases.

10. Sixty-seven per cent. of all the impacted calculi were in the lower third of the ureter.

11. Impacted calculi are apparently a disease of middle life, the average age of the patients being 43 years.

12. In 96 per cent. of the cases, the calculi were solitary.

13. Ureteral dilation should be attempted first, as this method was successful in 50 per cent. of the cases.

14. Extraperitoneal ureterolithotomy should be performed when ureteral dilation has failed.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. SHEA AND PEACOCK

Dr. William E. Lower, Cleveland: I have not been as successful as some surgeons have been in coaxing these stones down by manipulation. In the case of an impacted stone, I think it is a mistake to wait too long before operating. In many cases the stone will not pass before definite damage has been done to the kidney. I try to remove the stone by a muscle splitting operation. A straight incision in the back instead of the oblique incision will often make it possible to remove a stone from the upper end of the ureter. It is possible to remove many of these stones through a small incision, although I do not recommend too small an incision if it increases traction on the wound. If there has been much periureteral inflammation, the ureter should be moved as little as possible. If the stone is in the kidney pelvis, it can often be removed without manipulating the kidney: it is better to take the operation to the stone rather than to manipulate the kidney and ureter unnecessarily.

Dr. W. C. Quinby, Boston: I have had no experience with the analysis of stones as regards their shadow casting qualities, except in those instances, which we see rather more often than in the past, in which the stone consists almost entirely of cystin. There have been several cases in my clinic of cystin stones, which were found by the negative shadows cast in the roentgenray film. If one feels that there is a possibility of such a condition being present, I think it is wise to have the urine examined by the chemist for cystin. Cystinuria is a readily demonstrable condition. I wish to congratulate Dr. Peacock on his excellent presentation, in which I was much interested. I, too, feel very strongly that the manipulations that attempt to get the stone to pass by the normal passages are frequently overdone. The trauma and damage to the kidney that may follow too zealous attempts are very real. I have came to the point at which, if the dilation of the ureteral orifice, followed by some slight manipulation, fails, I desist from further manipulation and operate forthwith. It was mentioned by Dr. Peacock and Dr. Lower that one may sometimes find a large amount of periurethritis; in one of these instances, I was compelled to resect from 1 to 1½ inches of the ureter—the kidney being too good to be sacrificed—followed by an end to end suture. There was no leakage following the suture, and later the ureter was demonstrated to be patent. I have seen only one or two instances like this, but feel that we should use this procedure more in the future than we have in the past. There is one point in the delivery of stones that some may overlook. If the ureter is lifted far from its bed in getting the stone out, it is very important to see that it is put back in place before the wound is closed. I have had to reenter the field on some of these occasions, because of postoperative complications due to angulated ureter.

Dr. Daniel N. Eisendrath, Chicago: I agree with Drs. Lower and Quinby that one should not wait too long before ureterotomy is performed in cases in which nonoperative methods have been unsuccessful. At times there is such a severe febrile reaction after dilation of the ureter in these cases as to necessitate a nephrectomy. I have recently had such an experience and learn that an experienced urologist was obliged to remove the kidney in four such cases In regard to the technic of operative removal of calculi impacted in the juxtavesical and intraparietal portions of the ureter, we should always make an incision sufficiently large to afford a visual exposure of the point of impaction. A fairly large percentage of cases are complicated by stricture formation, and irreparable damage can result from incision into the ureter by sense of touch alone. I have employed a series of traction fine catgut sutures, beginning at the brim of the true pelvis and passing through the outer coat of the ureter. These enable me to expose successively deeper and deeper portions of the ureter by changing it from a curved tube into a straight one, so as to incise under guidance of the eye. I should like to have Dr. Peacock tell us whether he thinks that the stricture of the ureter in these cases is primary and the calculus secondary, or vice versa; i. e., is the stricture due to decubitus following impaction of the calculus?

Dr. R Arthur Hooe, Washington, D. C.: I will mention a case I recently saw that would serve well to illustrate the importance, as well as the difficulty, sometimes encountered in distinguishing between intra-ureteral obstructions and those due to pressure from without. This woman had had a pelvic operation some ten years previously, and presented symptoms of urinary obstruction. The point of the catheter arrested just within the ureter was shown by roentgenogram to be in contact with a rather large shadow, the size of the end of a thumb. After injection through the catheter of 15 per cent. sodium iodid, a second exposure showed the ureter so completely drawn around the first shadow as almost to encircle it. A laparotomy was performed, and a large body was found pushing into the broad ligament, which was tightly bound down. The pelvis was a mass of adhesions. After the mass had been elevated, the catheter passed easily to the kidney pelvis. Regarding ureteral calculi, I appreciate what Dr. Quinby has said; but as a result of a number of recent experiences, one, notably—the passage of a very large calculus by a short and very stout person who wished to avoid operation—I am inclined to believe that while in many cases operation is necessary, yet in another large group temporizing is the wisest procedure.

Dr. Ralph L. Dourmashkin, New York: The point I wish to discuss is what determines complete blockage of the kidney and when we should operate. My remarks are based on the study of 122 cases. There are two types of cases. In one the patient is acutely ill; there is an acutely impacted calculus in the ureter and an acutely infected kidney. In such cases, too much temporizing may lead to disastrous results, and the stone, as a rule, must be removed by operation. In the other type we are dealing with a chronic impaction of the stone. I have seen cases in which the stone has been impacted for many years and yet there was no renal infection, the kidney specimens of urine showing but a few pus cells, although the function of the kidney had suffered a great deal. What saves the kidney in these cases? If we examine the stone removed either by an operation or by intra-ureteral manipulations, we find a definite groove or a notch on the surface of the stone, which is nature's method of maintaining drainage, and that is the thing that saves the kidney. In these cases, although we are unable to pass a catheter by the stone, we are still able to collect urine through the catheter below the obstruction, the urine finding its way through the groove. I believe that some of these cases should be treated conservatively, and the patient given the benefit of cystoscopic manipulations. In this series the stones were removed by intra-ureteral manipulations in eighty-three cases, or 68 per cent. Eighteen patients, or 14.7 per cent., were operated on. It is said that the presence of a stone in the ureter is due to stricture. In a number of my cases the stones were removed by manipulations, the ureter being dilated to Size 20 with the tunneled bougies that I described some time ago. Certainly the patients did not have any strictures after such a dilation, and yet they continued to manufacture stones.

Dr. Charles S. Vivian, Phoenix, Ariz.: I suppose that after having a stone pass, by operative procedure or manipulation, it is well to pass the catheter, for subsequently I have found developing stricture. A patient had all the evidences of a retroperitoneal accumulation of pus. The abscess was drained retroperitoneally, and no stone was found. After the acute condition had subsided, she spontaneously passed a stone as big as the end of my index finger. The interesting point was that I catheterized her subsequently and found that the urine from that kidney contained as much urea as that from the kidney on the other side.

Dr. A. L. Chute, Boston: It has been a great pleasure to listen to these two papers. Dr. Peacock showed slides in which, in certain cases, a roentgen-ray examination had not been made of the entire urinary tract. It seems to me it is most unwise not to take in the whole tract whenever we use the roentgen ray; we so frequently find the underlying lesion in the part we did not take. I think we are, as a rule, unwise to leave a ureteral stone in the presence of pus and pain. There are some instances of small stones low in the ureter in which one can open the ureter some little distance above the stone, reach down with a long forceps, which some man in Rochester has devised, and work the stone up the ureter. There are instances, of course, in which this cannot be done; but, when it is possible, I think it is a better procedure than dissecting the lower end of the ureter free or opening blindly onto a stone in the lower end of the ureter.

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THE INFLUENCE OF FOCAL INFECTIONS *

D. J. McCARTHY, M.D.
Professor of Medical Jurisprudence, University of Pennsylvania School of Medicine
PHILADELPHIA

In studying the influence of focal infections on the human organism, we should fully realize that we are dealing largely with theoretical considerations and not with a definite, demonstrable fact or series of facts subject to a testing process, such as the pathologist or bacteriologist carries out in a laboratory experiment.

Any attitude on this subject, necessarily, must be largely a matter of impression on the part of the investigator, tinged somewhat by his state of mind toward the problem under consideration. Notwithstanding that this paper is the result of a careful analysis of 500 of my own cases, all studied in detail by one clinician, the opinions in reference to the influence of the focal infections, even in this group, are the impressions made on me by the results obtained in treatment, and are by no means facts, or to be taken as complete conclusive evidence of the direct causative relationship of focal infections to nervous or mental disease.

I do not mean to imply, on the other hand, that I do not have definitely formed conclusions in my own mind on this subject, but these again are influenced by my attitude toward both the neuroses and the psychoses. *I lay it down as a fundamental principle of therapeutics in mental and nervous diseases that, unless we have a definite theory of disease to work on, we need not expect results; to treat a mental state by drugs or psychotherapy, is to do little less than the Christian scientist would do with the same cases.*

I hold that a man or woman who was sane, had always been sane up to one month ago and is now insane, so insane, indeed, that he or she is in grave danger of confinement to an insane asylum, must have some real cause for this condition, and that this cause must be a definite chemical poisoning, either bacterial or visceral in nature.

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The thinking psychiatrist has come to view thought as something like the "heat" produced by muscular activity, as a manifestation of the action of the blood on the cerebral tissues in its passage through them, and not as some function inherent in the cells of and by themselves. In this sense, the brain becomes an organ for the registration of thought rather than for the production of something original. It is very much as if the liver said, "I will produce yellow or green bile." The thought processes are the products of chemical change with resultant energizing manifestations produced by the circulation of the blood through the brain tissues, and this thought process depends on two factors: the chemical composition of the blood, and the type of cell on which it acts. If this cell is a normal, healthy cell, we may expect a thought reaction within the normal limits; if it is decadent or diseased, the reaction will vary with the type of disease. This becomes of importance in the senile brain, the arteriosclerotic brain, the brain diseased by syphilis, sleeping sickness, etc. Here, also, we must consider the defective brain due to birth, to development and to heredity.

From the point of view of the adolescent psychoses, which present the great problem of insanity, in which inherited influences can be traced in less than 50 per cent. of cases, and in which we may assume, in a large majority of cases, a normal brain structure, chemical changes in the blood become of the greatest importance. These may be in the nature of artificial chemicals introduced from without, as in acute alcohol poisoning, opium, cocain, cannabis indica, lead carbon monoxid gas, etc.

In studying insanity, we are much more interested in the less well defined chemical changes introduced from within by disease of the heart, lungs, kidneys, liver, pancreas, the bone marrow, the spleen, the sex organs, and by that very important and less well understood group of glands of internal secretoin, the thyroid, the pituitary, the suprarenal, and the deranging effect of these on the chemistry of the other viscera mentioned above. As a rule, we have various and complex reactions of one on the other of the foregoing, because we lay it down as a rule of pathologic physiology that we cannot have a derangement of function of any one of the vital organs of the body, without some, and usually serious, derangement of function of all the other vital structures. When we add to this the derangement of the physical constitution of the blood in the severe anemias, we have still a further complicating factor.

To realize how complex a situation we are dealing with, one needs only to study an advancing case of fatal tuberculosis to the prelethal mental changes and the final fatal delirium. One can often, in these cases, study at first very subtle mental reactions—euphoria, advancing to depression, to suspicion and to delusions of persecution, proceeding to the last final delirium.

Cerebral anemia is associated usually with unrest, apprehension, suspicion and delusions of persecution. I have a case of a highly cultured woman, aged 65, who has a severe disease of the heart muscle, with low blood pressure. If she remains in bed, she is of absolutely normal, even high grade normal, mentality. If she tries to get out of bed and be up and about, she develops delusions of persecution. Having a full insight into this condition of mind, for several years she has refused to get out of bed, preferring the discomfort and disadvantages of the bedridden to the horror of disturbed mentality. Here we might say we have a case of purely mechanical mental derangement, but we must keep in mind that, with such a heart, the kidney function cannot be normal, nor is it likely that the liver and other organs being deprived of a full supply of blood, can be absolutely normal in function.

In tuberculosis in which anemia exists, we must add the effect of low blood pressure, the intoxication from the tubercle bacilli, the effect of complicating pus-producing organisms as the case advances, the disturbance of the ductless glands, and, secondary to this, the effects of the derangement of function of the spleen, the kidneys, the gastro-intestinal tract and other factors. It is evident how complex is the condition with which we are dealing. We all know how a small disturbance of liver function, which we call biliousness, affects us: the feeling of mental heaviness, the slight headaches, the mental depression, and the mental clumsiness we experience. The psychiatrist realizes how chronic liver disease in the sensitized person is apt to produce a incision sufficiently large to afford a visual exposure of the point of impaction. A fairly large percentage of cases are complicated by stricture formation, and irreparable damage can result from incision into the ureter by sense of touch alone. I have employed a series of traction fine catgut sutures, beginning at the brim of the true pelvis and passing through the outer coat of the ureter. These enable me to expose successively deeper and deeper portions of the ureter by changing it from a curved tube into a straight one, so as to incise under guidance of the eye. I should like to have Dr. Peacock tell us whether he thinks that the stricture of the ureter in these cases is primary and the calculus secondary, or vice versa; i. e., is the stricture due to decubitus following impaction of the calculus?

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* Read before the Section on Stomatology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

Dr. R. Arthur Hooe, Washington, D. C.: I will mention a case I recently saw that would serve well to illustrate the importance, as well as the difficulty, sometimes encountered in distinguishing between intra-ureteral obstructions and those due to pressure from without. This woman had had a pelvic operation some ten years previously, and presented symptoms of urinary obstruction. The point of the catheter arrested just within the ureter was shown by roentgenogram to be in contact with a rather large shadow, the size of the end of a thumb. After injection through the catheter of 15 per cent. sodium iodid, a second exposure showed the ureter so completely drawn around the first shadow as almost to encircle it. A laparotomy was performed, and a large body was found pushing into the broad ligament, which was tightly bound down. The pelvis was a mass of adhesions. After the mass had been elevated, the catheter passed easily to the kidney pelvis. Regarding ureteral calculi, I appreciate what Dr. Quinby has said; but as a result of a number of recent experiences, one, notably—the passage of a very large calculus by a short and very stout person who wished to avoid operation—I am inclined to believe that while in many cases operation is necessary, yet in another large group temporizing is the wisest procedure.

Dr. Ralph L. Dourmashkin, New York: The point I wish to discuss is what determines complete blockage of the kidney and when we should operate. My remarks are based on the study of 122 cases. There are two types of cases. In one the patient is acutely ill; there is an acutely impacted calculus in the ureter and an acutely infected kidney. In such cases, too much temporizing may lead to disastrous results, and the stone, as a rule, must be removed by operation. In the other type we are dealing with a chronic impaction of the stone. I have seen cases in which the stone has been impacted for many years and yet there was no renal infection, the kidney specimens of urine showing but a few pus cells, although the function of the kidney had suffered a great deal. What saves the kidney in these cases? If we examine the stone removed either by an operation or by intra-ureteral manipulations, we find a definite groove or a notch on the surface of the stone, which is nature's method of maintaining drainage, and that is the thing that saves the kidney. In these cases, although we are unable to pass a catheter by the stone, we are still able to collect urine through the catheter below the obstruction, the urine finding its way through the groove. I believe that some of these cases should be treated conservatively, and the patient given the benefit of cystoscopic manipulations. In this series the stones were removed by intra-ureteral manipulations in eighty-three cases, or 68 per cent. Eighteen patients, or 14.7 per cent., were operated on. It is said that the presence of a stone in the ureter is due to stricture. In a number of my cases the stones were removed by manipulations, the ureter being dilated to Size 20 with the tunneled bougies that I described some time ago. Certainly the patients did not have any strictures after such a dilation, and yet they continued to manufacture stones.

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chronic mentally depressed state. Here, while the condition is apparently simple, we are dealing with many and complex factors. And so again in the infectious and febrile deliria and psychotic states, we are dealing with extremely complicated factors of body and blood chemistry acting on the cells of the brain, producing in the normal brain simple delirium, and, in the diseased or sensitized brain, complex mental states.

If a man drinks a pint of alcohol, it will act on his kidneys if they are normal in one way, and if damaged by previous disease in an entirely different way, and often in a varying way, depending on the nature of the bacteria or its toxins producing the previous damage.

In the intricate brain function not only does the alcohol play on the strings of this delicate instrument, but the tune produced may be one of harmony or discord, depending not only on the physical damage, but also on the many residual impressions retained in the cell memories, of all kinds of shocks and instincts and pain impressions long out of the field of consciousness of the individual. These are mixed in the confused delirious states. They are difficult to understand, unless by a detailed study in the relatively normal state, all of those past and forgotten ideas that went to make the character whole are revealed. When we take a running, moving, mental picture of the ideas formed and concealed from the threshold of thought, in infancy, to the threshold of adult life, at adolescence, and link this up to disease processes that disturb the nutrition of the growing brain and alter its structure and function, in addition to splitting, at times, the personality over sex and other matters, we gain a more complete idea of what goes to produce that derangement of function that leads to conduct disorders that are, and also at times are not, insanity but are distinctly pathologic.

Tuberculosis in infancy, taking two or more years for adjustment, arrest or cure, interferes with the nutrition of the developing brain. To this add an intoxication, chemical in nature, due to disorder of function of the heart and circulation; a catarrh of all the mucous membranes, especially of the gastro-intestinal tract; disorder of the liver function; weakness of the nutritional stream to brain and viscera by anemia, more or less marked, and a grave strain leading to exhausting defect in the ductless gland structure in its defensive fight against the chronic disease, and the result is low blood pressure, a long, lanky, flat and often deformed chest, a low faulty position of the body viscera, flatfoot, etc. The central and peripheral reflexes and reactions are exalted and sensitized. Through childhood, ill health is likely to lead to introspection and a splitting of the personality, an asocial tendency, a suspicious, querulous personality. When we come to adolescence, when the machine is changed in its main function from one of growth to one of reproduction, the faultily nourished brain is asked to stand the brunt of an intoxication from a damaged ductless gland system which, overwhelmed by its efforts for defense, is inadequate to the demands of the change forced on it, and fails in the critical position it is asked to take.

These factors, therefore, including (*a*) the physical factors, (*b*) the chemical factors, (*c*) the growth factors, (*d*) the endocrine factors, (*e*) the faulty physiologic adjustments and (*f*) the faulty environment in a given personality that has not the physical resistance and recuperative power to swing back to a relative normal, represent the moving clinical picture of a partly or fully formed adolescent psychosis.

What influence has focal infection in this process of intoxication? Can a focal infection in a tooth cause insanity or neurasthenia or psychoneurosis? In my opinion, this is highly improbable, if not impossible, in the normal person, even though he has a vicious heredity, in reference to nervous or mental disease. I am fully aware of the reasoning that a streptococcic infection from the teeth may set up a vicious inflammatory rheumatism, but here again I question whether there is not some underlying disturbance of metabolism whereby the focal infection may precipitate a carbohydrate imbalance.

When we are dealing with the neuroses and psychoses, we are face to face with an entirely different situation. Here we may not expect a simple cause to produce such a complex result as an adolescent psychosis.

In studying this subject, I have taken the facts and separated them from the theoretical considerations.

In 120 cases of psychosis, we find the weight to be deficient in thirty-eight cases; the general condition of the patient to be below par in seventy-nine cases; involvement of the thyroid gland in twenty-nine; involvement of the endocrine system in fifty-seven; lowered blood pressure states in forty-four; focal infections in the teeth in sixty-one; tonsils in eighty-seven, and old or new pulmonary lesions in sixty-three.

Merely because we find focal infections in more than 60 per cent. of these cases are we justified in assuming that the focal infection is the cause of the psychosis? I do not think we are so justified.

Are we to assume that focal infections acting on a low blood pressure state are the cause of the disturbed mental condition? I do not think so. As this is a theoretical consideration, it must be faced as a theory separated from the facts.

How are we to measure the influence of the underweight factor; the underpar condition; the frequent, old, pulmonary lesions; the visceroptosis, etc.? Certainly, when dealing with a scientific problem, we should treat it in a scientific manner; and we are not justified in selecting some factors and discarding others, or, indeed, in discarding any factor before us.

If we analyze the weight factor, we find in 50 per cent. of the cases that the patient has been underweight from childhood.

We have no definite earlier records of the arterial hypotension, but here again we may assume that this is the natural and chronic condition of the individual.

As to the conditions obtaining in the endocrine sytsem at the time of adolescence, it may be assumed that these are in all probability not inherent from early childhood. They may be developmental conditions which have arisen at the time of, or some time previous to, the acute mental disturbance.

Focal infections may or may not be chronic. Infections in the tonsils may be active through childhood and adolescent life. It is the rule rather than the exception to find in this group a history of repeated attacks of tonsillitis or quinsy. The focal infection factor may be active in its effect on the organism, or it may be passive up to a time of reduced vitality, when it may cause a physical or nervous reaction. In any given case, it is difficult, if not impossible, to trace which of these two states exists or when a latent condition becomes active.

Focal infections in the teeth and the gums are much more definite. Here, there is usually some record of the care of the teeth. The frequency of focal infections from this source increases as life advances beyond the adolescent period. The most frequent source of infection at or preceding this time of life is found in the unerupted wisdom teeth. As life advances, permanent bridge work, neglected or poorly filled teeth and advanced pyorrhea become increasingly frequent in our statistics.

When we come to determine how focal infections act in order to produce disease conditions of the mind, we are forced to study their method of effecting disturbance of function or of producing disease of other viscera. Here again we are forced away from the facts into the realm of theory. That focal infections, when active, are associated with an endocrine reaction, more particularly in the thyroid function, will be admitted, I think by any clinician of wide experience. The favorable reaction of hyperthyroid states in the adolescent to removal of focal infections is evidence of this. We may assume, on account of the interrelationship of function and action of the various ductless glands, a reaction, to some extent, in the pituitary, at least, and probably also in the suprarenals and gonads. The effect of focal infection on the myocardial function may be direct or indirect through the pituitary-thyroid function. In 60 per cent. of the cases, we have found the myocardial function faulty. This may be considered as evidence of actual physical damage to this organ. Is it caused by the focal infection factor? Here again this problem of internal medicine has hardly even been considered by the clinicians. The same is true to a less extent of the relation of focal infection of teeth, tonsils, sinuses and gallbladder infection to the liver function; to the kidney function, secondary to the initial lesions, and of the anemic states that have been from time to time linked up with infections in the mouth and the upper respiratory area.

The best evidences we have of the effect of focal infections on the heart function are the pulse and blood pressure reactions shown in the effort test, to focal infections, and the disappearance of these phenomena when the focal infection is relieved. Cardiac arrhythmias are not infrequent in active focal infections. Subjective symptoms of palpitation (tachycardia), substernal pressure and precardial distress are not infrequent. From an analysis of the literature on these subjects, it becomes evident that the time has arrived for definite information on a subject much talked about, but with little evidence on which to base reasonable conclusions. The effect of focal infections on the kidney function, as far as I have been able to determine, is purely secondary to the cardiac reaction.

Do the focal infections act directly on the central nervous system, on the brain, in the production of mental disease? In the vast majority of cases, I think this is a minor factor, if it acts at all. There are, however, cases in which the evidence is in favor of a direct action. This is particularly true in the chorea insaniens group. A patient now under my care, a boy, aged 17, 6 feet (183 cm.) tall, weighing 130 pounds (59 kg.), had an attack of quinsy three months ago. In six weeks, he lost 30 pounds (13 kg.). For the last four weeks, he has had a well defined Sydenham's chorea with mental symptoms. The natural assumption would be to link up the chorea and mental symptoms with the focal infections, and I feel quite certain that the chorea was the direct result of the focal infection on the cerebral tissues. One might also add that the mental symptoms were the direct effect of the tonsil infection. A general physical survey revealed an old pulmonary lesion in the right upper lobe; the thyroid gland diminished in size and of increased consistency; systolic blood pressure, 100; diastolic, 60. The very marked loss of weight and strength, the old tuberculosis and the endocrine imbalance had to be considered as factors in the mental picture, and equally so in the therapy of the case. I did not think it advisable in this case to remove the tonsils for fear of precipitating a more serious mental state. An infected tooth was removed and a process of upbuilding instituted. In one month, he has gained 14 pounds (6 kg.). The chorea has almost disappeared, but the mental picture is becoming definitely fixed into an adolescent psychosis with a neurosexual splitting of the consciousness. With his general vigor improved, we are now prepared to remove the tonsils. In this case I expect a favorable result. I quote this as a type of case in which the focal infection acts both directly and indirectly on the brain tissues, already disturbed, however, by other chronic pathologic factors.

Focal infections, if severe, would act as any other continuing infection, both directly and indirectly, on the nervous system of the growing child. Most of the teeth infections and, for the most part, the tonsil infections, act on an already damaged body chemistry.

My working theory of the relationship of the focal infections to the psychoses and neuroses is as follows:

A. Severe bacterial and prolonged infections, such as tuberculosis or syphilis in childhood, causing a strain on the endocrine defense system at a time when its function is required for growth, leads to faulty nutrition throughout childhood, with underweight, low blood pressure and a sensitized nervous system.

B. When adolescence is reached, the endocrine system, whose major function was one of the control of the growth process, is now suddenly overburdened with the new function of reproduction.

If at this time, when the endocrine and nervous systems are overburdened and overstrained with the functional turnover of adolescence, a focal infection is added, for which there is no defense, the whole body chemistry is deranged, with a toxic physical and mental picture we call dementia praecox or adolescent psychosis.

I believe that in the majority of these cases, the removal of all focal infections becomes one of the most important therapeutic measures; this alone, however, is rarely sufficient and should be considered with rest, occupation, mental training, good nursing, and an effort to get a normal functioning of all the viscera.

CONCLUSIONS

1. Focal infections in the upper respiratory tract are present in a sufficiently large percentage of cases of the psychoses and neuroses to warrant the assumption of a causal relationship between the focal infections and the disease conditions of the nervous system.

2. Focal infections of and by themselves are probably the cause of the psychotic or psychoneurotic condition in only a relatively small percentage of cases.

3. In the vast majority of cases, the focal infections process acts on an already existing condition of undernutrition, anemia, endocrine imbalance, etc. Focal infections appear to produce much more marked nervous symptoms and to produce them with greater frequency in individuals with arterial hypotension than in those with normal blood pressure or an arterial hypertension. This is probably an endocrine reaction.

ABSTRACT OF DISCUSSION

Dr. George M. Dorrance, Philadelphia: It has been our practice, when we are not sure that a patient has a chronic infection of the antrum, not to trust to the nasal packing but to "take a look." In one case, which Dr. McCarthy will remember, the tonsils had been removed and the teeth were taken care of. Surely, there was nothing wrong with that antrum. Until the focal infection was removed, however, the patient did not improve. As soon as the antrum was drained, the patient immediately improved and was able to work. We have had similar experiences in three cases. One should always consider the possibility of a chronically infected antrum; if one is not sure of it, it does not do any harm to open into it. We find that practically all these patients have a dull ache over the antrum. On the question of tonsils, I agree with Dr. McCarthy. There is no doubt that chronic infection reacts largely through the liver and the kidney. There is a question at present whether one should tap the abscess at the periapical area. It is not worth while doing that when there is a psychosis. One should take the teeth out and should not try to drain the abscess.

Dr. William A. Jaquette, Philadelphia: I believe we cannot disagree in any instance when it is absolutely necessary to remove all possible dental foci of infection in one manner or another. Dr. McCarthy has been a little severe on members of my profession in their delinquencies, but I am sure that he has been justified in many instances. He is giving the subject attention from the highest point of view, and there are many members of my profession who are giving it the same type of serious consideration. If the dentist would give this subject sincere and scientific study, he would not disagree in the removal of those dental foci. Determination of extraction of teeth should not be in the hands of a physician but in the hands of a dentist. There is a tendency among physicians to extract all teeth with crowns and to leave next to that crown a tooth with a small filling in it. That tooth, however, may be more certainly infected than the one with the crown. Many dentists are putting crowns on vital teeth. It is not the crown that is the deciding point in the extraction of teeth. Most serious dentists believe that in critical cases, such as those outlined by Dr. McCarthy, all teeth that are even devitalized, even though there is no roentgen-ray evidence, should be removed. Dr. Dorrance said that with those teeth one should not even attempt the amputation of the root end. With that I concur.

Dr. Dudley E. Mackey, Bloomfield, N. J.: I have observed in the last two years more thant 3,000 cases treated through our dental department. A roentgenogram, when indicated, is made of every patient entering the Essex County Hospital for the Insane; the patient is then treated by the dentist or physician. We found that about 64 per cent. had visceroptosis; 68 per cent. showed dental defects, either one or a number of teeth being infected. About 27 per cent. showed pathologic tonsils. I do not remember the percentage of thyroids, but 17 per cent. were tuberculous, and 70 per cent. had sinuses showing abnormal conditions, with antrum and ethmoid infection predominating. In the last two months we have started a general examination of every male patient to determine the condition of the sinuses. Up to this time I have completed 100 cases. Seventy per cent. so far show abnormal conditions. Most of the cases show infection of the antrum, and a large percentage of them showed infected ethmoids. We have not had the same experience as Dr. Cotton in the removal of kinks of the colon, nor have we had the excellent results he has reported in the removal of teeth, but we have helped the patients physically by the removal of teeth and by the treatment of their physical conditions. We have not been able to determine whether the mental condition is due to dental or gastro-intestinal disturbance, yet we find that improving the physical deficiencies tends to improve some patients mentally, while in others there is no change.

Dr. James R. Cameron, Philadelphia: One of the big points that appealed to me was the plea for cooperation between the neurologist or the internist and the dentist. However, Dr. McCarthy must not overlook the fact that so often patients are referred to the dentist from the internist or the neurologist with a request that the teeth be extracted; there is no history of the case. If the neurologist or internist would send some kind of a history along with the patient, the dentist would appreciate what is wanted and would be willing to cooperate to the fullest extent. In hospital practice, when the dental surgeon is called into consultation, he has access to the entire medical history of the patient; he knows what the internist wants and he tries to cooperate, whereas in private practice the patient is often sent from the neurologist to the dentist, from the dentist to the extraction specialist, and the extraction specialist knows nothing about the history of the case. Closer cooperation and exchange of ideas is most essential.

Dr. Carl W. Waldron, Minneapolis: In cases in which there is a psychosis or any nervous or mental condition, it is the duty of the nervous and mental disease specialist in charge to get in touch with the dentist and talk the case over with him to assure full coopertaion. Many patients are simply sent to the dental practitioner to have their mouths looked over and put in good condition. That does not further cooperation. It is the duty of the rhinologist who finds dental infection beneath an infected sinus to get in touch with the dentist and be assured of the technic that will be carried out in taking care of that dental infection. I have wondered, after listening to Dr. McCarthy's opinions in regard to the taking care of periapical areas, whether in his locality an accurate check has been made of the various methods of handling dental infection. In the Middle West we feel that careful exposure of the parts by a modified alveolar resection, with the enucleation method of removing infection, gives much less reaction than the old-fashioned simple extraction. It has been checked up with the temperature reaction, the effect on the blood counts, and the effect on the patient's feeling and general condition. Many oral surgeons feel that it is safer to undertake careful open view surgery of the alveolar area than simple extraction and drainage. This has been my reaction, because I have yet to see any untoward results from proper oral surgical procedures. Rather than injudicious curettage, I suggest that open view operations be carried out, because they do not menace the patient from the standpoint of the spreading of streptococcic infection.

Dr. D. J. McCarthy, Philadelphia: I limited myself to the condition about the teeth. When the question of sinus involvement is considered, I agree with Dr. Mackey. We keep in mind focal infections in the teeth, and I look for focal infections all over the body. Dr. Mackey said he found visceroptosis in 64 per cent. of the cases. That is exactly in line with the subject of my paper. I do not agree with any clinician who says that a man is born with a Botticelli figure, with the liver down and with the stomach and colon in the pelvis. I think such a child was born normal, and some infection in early childhood reduced the vitality of the growing form; when the crawling quadruped got on its feet, it was so relaxed that its organs dropped down. Visceroptosis cases are manifestations of some severe infection in early childhood that give rise to a disturbance and stress on the endocrine system. When the child comes to adolescence, and added focal infection develops, a psychosis is often precipitated. I have no quarrel with Dr. Jaquette. I did not in the slightest degree intend to reflect on the dental profession any more than on the medical profession, but I can show you films of work done by dentists that the dental profession would be ashamed of. The same thing is true of the diagnoses of the patients that come through from physicians who have bungled their work. It is not my policy to criticize, but when I see case after case of bridge work covering old infected stumps, I know that something is wrong. Very often I study the case again, and if the dentist has not done what I consider necessary, I take the patient out of his hands and put him in the hands of a dentist who will do good and complete work. Does the dentist ever say, "Tell me about your health. What diseases have you had? Have you had any attacks of tonsillitis or rheumatism? Have you had any heart disease?" Every time that I go to a dentist he sticks a mirror in my mouth, grubs around, makes a note or two, and then reaches for a drill. The dentist who will not take the history of the case is in the same position as the practitioner who prescribes for the patient without getting his history. I quite agree that in every case of importance there should be cooperation between the dentist and the physician.

CARBON DIOXID AS AN AID IN GENERAL ANESTHESIA*

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The introduction of ethylene into the field of anesthesia in the early part of 1923 by Luckhardt[1] suggested the need for an enlarged gas machine by which ethylene, nitrous oxid, oxygen, carbon dioxid and ether could be administered[2] The work of Henderson, Haggard and Coburn[3] and White,[4] showing that carbon dioxid aids in the introduction of ether[5] as well as in its elimination, and that it is also an aid in ethylene anesthesia,[6] prompted me to include a control for carbon dioxid, thus making an apparatus of the four-control type. Some of these machines were the Gwathmey type; others were the Heidbrink type. Attachments for the ordinary gas machine were not satisfactory.

In the cases discussed here, in which the apparatus was used, carbon dioxid was shown to be an aid in gas and in gas-ether anesthesia. The tabulation of cases shows the various combinations in which carbon dioxid was used from July, 1924, to September, 1925, in the Mayo Clinic This series of cases covers almost the entire field of general surgery

Administration of Carbon Dioxid

	1924	1925
Carbon dioxid and oxygen (to resuscitate infants)	4	20
Local, carbon dioxid and oxygen	..	1
Carbon dioxid and oxygen after ether		1
Nitrous oxid, carbon dioxid and oxygen		91
Nitrous oxid, ethylene, carbon dioxid and oxygen	13	438
Nitrous oxid, carbon dioxid, oxygen and ether		17
Nitrous oxid, ethylene, carbon dioxid, oxygen and ether	9	245
Ethylene, carbon dioxid	29	67
Ethylene, carbon dioxid,		269
Local, nitrous oxid, car	2	1
Local, ethylene, carbon	..	43
Local, nitrous oxid, ethy	1	33
Local, ethylene, carbon dioxid, oxygen and ether		38
Local, nitrous oxid, ethylene, carbon dioxid, oxygen and ether		28
Total	58	1,292

The percentages recorded are only approximate, and are calculated from the flow of the various gases through the machine A patient, of course, cannot tolerate more than between 4 and 6 per cent of carbon dioxid in the mixture for continuous inhalation I have been guided in the amount by the character of the respiration, and have endeavored not to exceed an amount sufficient approximately to double the depth of respiration. In most cases, respiration was increased in depth more than in rate, according to the well recognized physiologic effects of carbon dioxid. Individual tanks of nitrous oxid, ethylene, oxygen and carbon dioxid have been used. Carbon dioxid has been used both intermittently and continuously in the induction, maintenance and termination of various anesthesias, or whenever the anesthetist wished to control the patient's respirations.

TECHNIC

For the first or induction period, the breathing bag is filled with a mixture of nitrous oxid, about 80 per cent., and oxygen, 20 per cent. The anesthetist smells the mixture to be sure that there is no unpleasant odor due to stale gas or escaping ethylene, ether or carbon dioxid. The mask is then placed over the patient's face and he breathes into and out of the bag. After from four to six breaths, the carbon dioxid is gradually added to the mixture, a flow of one or two holes on the Gwathmey machine and a flow of from 3 to 10 gallons an hour in the new Heidbrink machine being used The breathing bag is 35 cm in diameter, and the carbon dioxid flows about one and a half minutes to obtain the desired effect on respiration. Ethylene is then gradually added, and the nitrous oxid gradually shut off until the mixture is approximately 75 per cent. ethylene, 20 per cent. oxygen, and 5 per cent. carbon dioxid On a Gwathmey machine, the sight feed flow is four or five holes of ethylene, two or three of oxygen and one or two of carbon dioxid The four to six breaths of nitrous oxid and oxygen produce slight vertigo and dull the patient's sense of smell, so that the gradual addition of the ethylene is, as a rule, not unpleasant The carbon dioxid stimulates the patient to breathe deeply of the mixture and smooths out the second stage of anesthesia Four or five breaths of the mixture containing ethylene, as a rule, suffice to render the patient unconscious and produce light anesthesia, which rapidly becomes deeper until the third stage is established. Apparently the increase in the depth of respiration makes the anesthesia smoother and keeps the patient pinker than when carbon dioxid is not used This is equally true whether or not a preliminary hypnotic of morphin has been employed

In order to produce satisfactory relaxation, it is often necessary to add ether to the ethylene Carbon dioxid has speeded up the absorption of ether and has almost entirely eliminated respiratory inhibition The use of carbon dioxid, as a rule, reduced the quantity of ether used by about one half, the vapor was equally reduced in concentration, probably because of an increase in absorption and a decrease in waste. If carbon dioxid has not been used the patient may strain and hold his breath when the peritoneum is being incised and the exploring hand passed through the abdomen. For certain patients it is necessary to increase the percentage of carbon dioxid in the mixture at the time of the exploration Strong concentrations, however, must be avoided With the Gwathmey type of machine in such cases, not more than three holes of carbon dioxid are used, and with the Heidbrink type, not more than 10 or 12 gallons an hour. The increased flow of carbon dioxid, although considerable, lasts for only a minute or two, and increases the percentage inspired but slightly. When a diseased organ has been delivered into the wound, the carbon dioxid and ether are still further decreased The machine will then be feeding approximately 75 per cent. ethylene, 20 per cent oxygen and from 3 to 5 per cent carbon dioxid, besides, of course, the slight amount of carbon dioxid supplied by rebreathing.

From time to time the anesthetist should open the exhaling valve and smell of the mixture in the bag.

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* From the Section on Anesthesia, Mayo Clinic

* Read before the King County Medical Society Seattle, Sept 21, 1925

[1] Luckhardt, A B, and Carter, J B Ethylene as a Gas Anesthetic, Preliminary Communication, J A M A **80:** 1440 1442 (May 19) 1923

[2] Lundy, J S Ordinary Ethylene Oxygen Administration J Iowa State M Soc **15:** 371 373, 1925, Anesthesia by Nitrous Oxid, Ethylene, Carbon Dioxid, and Oxygen for Dental Operations on Children, Dental Cosmos, to be published

[3] Henderson, Yandell, Haggard, H W, and Coburn, R C The Therapeutic Use of Carbon Dioxid After Anesthesia and Operation J A M A **74:** 783 786 (March 20) 1920 Henderson, Yandell, and Scarbrough, M M Acapnia and Shock VI Acapnia as a Factor in the Dangers of Anesthesia, Am J Physiol **24:** 260 286, 1910

[4] White, J C Deetherization by Means of Carbon Dioxid Inhalations Arch Surg **7:** 347 370 (Sept) 1923

[5] Haggard, H W The Absorption, Distribution and Elimination of Ethyl Ether, J Biol Chem **59.** 753 770 (April) 1924

[6] Henderson, Yandell Resuscitation, J A M A **83.** 758 763 (Sept 6) 1924

The odor of ether in the bag should never be stronger than the anesthetist himself can tolerate, and the carbon dioxid should never be discernible. During the operative work on viscera at rest, the anesthetic mixture usually consists of ethylene and oxygen with small quantities of carbon dioxid. Before the viscera are replaced within the abdominal cavity and the abdominal wall is closed, ether may be added and the percentage of carbon dioxid raised, so that the machine shows a flow of from 5 to 7 gallons an hour (from 3 to 7 per cent.) of the total flow. If the abdominal wall has been blocked regionally with procain as part of the preoperative preparation, ether will probably not be necessary for the closure. It is not desirable to administer carbon dioxid in quantities sufficient to cause overvigorous movements of the chest and the abdomen at any time. When the patient's normal respirations have been approximately doubled in depth, the right amount of carbon dioxid is being used, and the ether may be added. After the peritoneum has been closed, nitrous oxid may be substituted for the ethylene and ether. The exhaling valve should then be opened and from 3 to 5 per cent. of carbon dioxid used. The ethylene and ether are thus gradually eliminated and replaced by nitrous oxid, and by the time the skin sutures have been placed a large amount of ether and ethylene will have been eliminated. As a rule, patients awaken a short time after the mask has been lifted from the face. Some of them vomit, but not excessively as a rule. In operations on the gallbladder, the grunt occasioned by the surgeon's pull on the organ is less noticeable when carbon dioxid is used, and sometimes it is entirely absent. In extra-abdominal operations it is often unnecessary to add ether to the gas, when carbon dioxid is used.

CARBON DIOXID IN OBSTETRICS

Carbon dioxid has proved of value for obstetric anesthesia. A mixture of nitrous oxid, about 50 per cent., and oxygen, 50 per cent., is given in the early period of pain, and when the pains become more severe the nitrous oxid is gradually increased until the mixture in the bag is from about 80 to 85 per cent. nitrous oxid and from 15 to 20 per cent. oxygen. When the pains become still more severe, ethylene is added and the nitrous oxid reduced, about 40 per cent. of nitrous oxid, 40 per cent. of ethylene, and 20 per cent. of oxygen being used. This mixture is gradually changed as the pains increase until the nitrous oxid is discontinued and the bag is filled with ethylene, about 80 per cent., and oxygen, 20 per cent. As soon as the patient gives the sign of an approaching pain, she is given four or five breaths of the mixture in the bag. Because of the intermittent administration of a few breaths at a time, some patients will require as much as 90 per cent. of ethylene and 10 per cent. of oxygen. As the baby's head presses against the perineum and begins to dilate the external outlet, some patients hold their breath and bear down in spite of all remonstrances; carbon dioxid may then be of advantage. Anesthesia is often quickly induced, and the mother prevented from holding her breath and bearing down. It is obviously not always possible to get this effect in an intermittent anesthesia.

RESUSCITATING THE NEW-BORN INFANT

If the new-born infant does not breathe well, respiration may be established quickly by the use of artificial respiration and oxygen containing 5 per cent. of carbon dioxid. The obstetrician places his hands so that his palms are against the baby's chest, the fingers point toward the head, and the baby's arms protrude between his thumb and index finger. He gently presses on the infant's chest with his thumbs. The anesthetist stands at the baby's head and places the mask snugly over its mouth and nose. As the obstetrician's thumbs rise, the oxygen and carbon dioxid are administered under slightly increased pressure so that they inflate the baby's lungs. This manipulation is, as a rule, sufficient to start respiration after it has been repeated a few times, if the air passages are clear. As the pulmonary tissue is very delicate, great caution must be used not to have the pressure exceed 3 cm. of water; this can be controlled by inserting a water safety valve.

DENTAL ANESTHESIA

In dental surgery, carbon dioxid aids in maintaining nitrous oxid or ethylene anesthesia with little struggling or cyanosis. This has been of decided advantage in dental operations on children.[3]

ADVANTAGES OF CARBON DIOXID

The advantages of using carbon dioxid during the induction and maintenance and at the termination of anesthesia are:

1. An increase in the rate of absorption of ether, when it is used alone or with other anesthetic agents, by increasing the volume of respiration.[5]
2. Low concentrations of ether vapor.
3. Reduction of struggling, breath holding and shallow breathing, and the absence of cyanosis.
4. Greater relaxation in light anesthesia.
5. The quieting effect of morphin, without its occasional bad effect on the respiratory center.
6. The starting of respiration in the new-born infant without the usual vigorous manipulations, if the air passages are clear.
7. Better prognosis if patients are moribund from operative procedures or for other reasons.
8. A lack of idiosyncrasies to low concentrations (3 per cent.).
9. Safer induction and maintenance of gas anesthesia in children.
10. The hastening of the elimination of ether and revival of the patient.[4]

INDICATIONS OF OVERDOSE

Carbon dioxid has been used in the present series of cases during induction and maintenance and at the termination of anesthesia in nearly all types of surgery. When used in moderation, it has been of assistance to the anesthetist. It is distinctly a disadvantage, however, to use it in strong concentrations. The signs of overdosage are coughing, breath holding and overvigorous abdominal and chest movements. One piece of apparatus is so constructed that it limits the quantity of carbon dioxid, but this does not make it fool-proof. It is of the utmost importance to caution the anesthetist never to use carbon dioxid *in strong concentrations.*

COMMENT

On several occasions, I have administered oxygen to normal persons, and have asked them to hold their breath voluntarily at intervals. I then gradually added carbon dioxid to the oxygen until they were unable to hold their breath. From these experiments it would seem that with loss of consciousness, a patient could be made to breathe under all circumstances by administering carbon dioxid in moderate quantities. However, the throat and laryngeal reflexes usually operate regardless of the effect of carbon dioxid on the respiratory center. This protective mechanism is most noticeable with light anesthesia. The throat and laryngeal reflexes also seem to protect the patient against the inhalation of great concentrations of ether or carbon dioxid, which would, of course, be deleterious. Nevertheless, every care must be used to keep the air passages patent and free from foreign bodies and fluids.

The work of Haggard, on dogs, wherein he laid the foundation for the use of carbon dioxid with ether, should be carefully read by all who are interested in this subject. Haggard has shown that the increase in the volume of respiration caused by the inhalation of carbon dioxid hastens the absorption of ether vapor, and that anesthesia is as quickly produced when carbon dioxid is used with a low concentration of ether vapor as when a highly concentrated ether vapor is used alone. Theoretically, then, the addition of carbon dioxid would probably reduce the frequency of postoperative pneumonia, because a more dilute vapor could be used with consequent less irritation of the air passages.

PREFERENCE FOR CARBON DIOXID

The patients in this series have been anesthetized by about ten different anesthetists; all are enthusiastic in advocating the use of carbon dioxid as a means of making general anesthesia easier to induce and maintain, and are reluctant to administer an anesthetic without having carbon dioxid at hand. It is generally agreed, among those who have administered the anesthetics in this series, that when ether and carbon dioxid are added in proper amounts, either singly or together, to nitrous oxid or ethylene, the resulting anesthesia is usually satisfactory.

INVESTIGATION OF THE ACTION OF CARBON DIOXID IN GAS ANESTHESIA

Future investigation may explain how carbon dioxid assists in producing relaxation, if it actually does produce it. In certain cases, when it is used during light anesthesia, the fighting of the excitement stage is lessened or eliminated. Possibly, control of the respiratory center or breathing reflex causes struggling to disappear to some extent. Sometimes the effect of carbon dioxid during anesthesia is similar to that produced during bimanual examination when the patient is asked to breathe deeply through the mouth; under those circumstances not much relaxation is produced, but much of the tenseness is abolished. In some anesthesias it seems that carbon dioxid, by producing deep breathing, has coordinated the reflexes to such an extent that the nervous, tense patient becomes as quiet as in normal sleep. In normal sleep one is usually somewhat relaxed, yet moves and turns from time to time. It might be said that carbon dioxid, when it is functioning as desired, brings an otherwise tense patient to the relaxation of sleep, and that the anesthetic agents carry the patient on into a state of complete relaxation. Carbon dioxid, when used in proper amounts with anesthetic agents, seems to contribute definitely to the relaxation. The explanation as herein set forth is based on observation and deduction and may be erroneous; nevertheless, we have obtained good results from the use of carbon dioxid during gas anesthesia. I have frequently observed that when using carbon dioxid in gas anesthesia, even without ether, the movements, especially of the extremities, are less frequent. Some patients who are so lightly anesthetized that they will open and close their eyes when given carbon dioxid often make no other movement, even when the incision is made.

CONCLUSIONS

1. Carbon dioxid in moderate concentration assists in producing anesthesia, rendering the anesthetic apparently safer and easier to administer.
2. Carbon dioxid should be used in such concentrations as will produce optimal results, and these vary with the individual and the type and stage of the operation. Too much carbon dioxid is worse than none, and care should be exercised to prevent more than 5 per cent. being used.
3. The results thus far in a series of 1,350 cases in the Mayo Clinic are satisfactory enough to warrant further investigation by others in the use of carbon dioxid during the induction and maintenance and at the termination of ordinary general anesthesia.

HEMATOMA OCCURRING SPONTANEOUSLY IN SHEATH OF RECTUS ABDOMINIS MUSCLE

A CONSIDERATION OF ITS GYNECOLOGIC AND OBSTETRIC SIGNIFICANCE: REPORT OF TWO CASES

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Rupture of the fibers of the rectus abdominis muscle, when not due to external violence, occurs as the result of strong or unusual contraction, though in a few cases there is a record of nothing more than ordinary muscular effort. As a rule this accident carries with it laceration of the branches of the epigastric vessels, sometimes of the trunks themselves, and, as a result, a hematoma forms within the aponeurotic sheath. This condition is of surgical interest not only because it constitutes a lesion, but also because the signs and symptoms produced lead to misinterpretation in suggesting intraperitoneal disease. When the accident occurs in women, it is nearly always mistaken for some critical form of abdominal or pelvic pathologic condition. Surgical textbooks either omit the subject or refer to it briefly, and gynecologic textbooks make no reference to it. Haubold[1] refers to subcutaneous lacerations of the musculature of the abdominal wall as not rare. He states that the lesion is most likely to happen in acrobats and has occurred in persons convalescing from prolonged infectious diseases, such as typhoid fever, as a result of slight exertion. The earliest reference to the condition is that of Maydl[2] in 1882; the first American report, that of Pilcher[3] in 1913.

In 1923, Wohlgemuth[4] collected 127 cases from the literature, 107 of which had occurred in young men, chiefly turners, soldiers and cavalrymen. He considered these as not strictly spontaneous ruptures, regarding extreme muscular effort as traumatic in nature; real spontaneous rupture occurred in the remaining twenty cases, seven in elderly persons and the rest in those suffering from infectious diseases, burns, chilling and the like, or during pregnancy and labor.

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[1] Haubold, H. A.: Principles and Practice of Surgery, New York, D. Appleton & Co., 1921, p. 1885.

[2] Maydl: Ueber subkutane Muskel- und Sehnenzerreissungen sowie Rissfrakturen usw., Ztschr. f. Chir. **17** and **18**: 306-361, 513-547, 35-139, 1882.

[3] Pilcher, L. S.: Spontaneous Rupture of the Rectus Abdominis Muscle, Brooklyn and New York, Year Book, Pilcher Hospital **3**: 14, 1913.

[4] Wohlgemuth, K.: Ueber die subkutane Ruptur des M. rectus abdominis und der Art. epigastrica (Spontanes Bauchdeckenhämatom), Arch. f. klin. Chir. **122**: 649. 1923.

Commenting on the myalgia and muscular weakness so common in influenza, Cooper Cole[5] found abscess formation in some muscles, and marked degeneration was repeatedly noted in the rectus abdominis. The muscles looked gray and cooked, and flaked readily a few hours after death. Their fibers were found to be ruptured, as cleanly as if cut. Hemorrhages were frequent, usually in the lowest quarter only, occasionally throughout the length of the sheath. Klotz[6] found the same condition and regarded it as primarily a focal degeneration. He found similar foci in the pectoral, psoas, gluteus and sternomastoid muscles and suggested that this may explain certain postinfluenzal deep seated abscesses. Rost[7] has reported two cases occurring in the course of typhoid fever; Carnot[8] discussed those complicating diseases of the liver.

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As regards the cases occurring in women, of the fourteen in Perman's series, all but one were over 35 years of age, and most of them were multiparas. Rectus hematoma appears most frequently among the middle aged and elderly, and the exertion, as a rule, is much less than that required to produce it in men. Perman suggests that this is due to the fact that woman's musculature is not as strong as man's, and that the rectus becomes still further weakened by the distention of repeated pregnancies. The loss of elasticity with advancing years may be offered as another factor, and changes in the walls of the blood vessels as a third.

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Differential diagnosis is rendered difficult by the added fact that there is no history of trauma and that only too often statements by the patient regarding lifting, straining, coughing, falling and the like are disregarded. Patients often ascribe illness due to intra-abdominal disease to the same apparently unimportant features.

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A consideration of such cases as have occurred in women shows that rectus hematoma bears a strong resemblance, symptomatically, to intraperitoneal or pelvic disease. A brief summary[20] of these cases brings out the points important in differential diagnosis.

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A well developed woman, aged 34, of normal weight, 125 pounds (56.7 kg.), the mother of two children, 10 and 5 years old, respectively, was accustomed to an active home and outdoor life. She gave a history of no previous illness except diphtheria eleven years previously. June 11, 1923, while driving from the tee in a game of golf, she experienced a sudden, sharp pain in the lower right abdomen. This persisted, but she finished the first nine holes, refusing to play a second round because of the pain. She did not play golf again until five days later, June 16. During the first seven holes she noticed some pain in her right side, and this was much more severe when she got a long drive with the wooden clubs. When she drove from the eighth tee she "suffered a terribly sharp pain, as if some one were cutting the right side open with a knife." The eighth and ninth holes were finished, but under great pain. While taking her shower after the game she noticed a swelling in the right side and, because of this and the pain, she sent for her physician. He was unable to attend her at once, and she went to a formal tea, where she "did nothing but try to protect her injured side from the crowd." That evening she attended a dinner party, later driving 25 miles by motor car to her home, where she arrived in partial collapse. The next day she remained in bed under the influence of stimulants and sedatives.

During the five days between the two games of golf the patient suffered chills on two different nights. Once during that week she went swimming and was able to dive three or four times without noticing pain. She entered the hospital, June 18, seven days after her first attack of pain and two days following the second attack, under the diagnosis of strangulated ovarian cyst, or tubal pregnancy. In this connection it should be stated that her menstruation had been regular, occurring every twenty-eight days, of from five to six days' duration, the last two periods having occurred, April 24 and May 25, respectively.

On examination the abdomen was flat, firm, soft and elastic, except for a somewhat indefinite mass or resistant area just above Poupart's ligament on the right side. This area was tender and painful. Vaginally, the uterus lay in retroversion, and was normal in size and freely movable. The left appendage was prolapsed, but on the right side a fixed, tender mass the size of an orange was palpable. The most notable thing about this mass was that it appeared to lie in the anterior pelvis, as if anterior to the round ligament, or, as described in the case record, behind Poupart's ligament.

The patient experienced no chills while under observation; her temperature ranged from 99.5 to 100.2 F., and the leukocyte count was 12,000. After two days' observation, an operation was performed. The skin of the abdominal wall showed no discoloration, but as soon as the subcutaneous fat was reached, an extensive ecchymosis was evident, involving the fat, aponeurosis and right rectus muscle. The structures were not only discolored but also infiltrated and swollen, and between the lower portion of the muscle and its deep fascial sheath lay several ounces of clotted blood. This was removed and revealed the muscle fibers, not divided sharply but as if shredded, and there was some separation of the muscle bundles longitudinally. This area, as it involved the muscle, extended from the symphysis for 10 cm. upward. There was no active bleeding. The ecchymosis involved the peritoneum, which, though markedly discolored, was smooth and shiny on its inner surface, and extended farther into the right round and broad ligaments. This discoloration was apparent throughout the right pelvic wall as far down as the uterosacral ligament, but stopped short of the tube, ovary and uterus by a sharp line of demarcation. The uterus and its appendages were normal.

Since the preparation of this report I have been permitted by Dr. Carl Beck to include one more case:

An Italian woman, obese, about 40 years of age, who had had six children, was suffering from a severe bronchitis. She had coughed hard for several days, when she began to experience pain in the upper right quadrant of the abdomen. Examination showed a hard, tender swelling, the size of a hen's egg. Vomiting, jaundice and constipation were absent. A diagnosis of gallbladder disease was made. An operation revealed that the mass was a hematoma in the sheath of the rectus muscle, just beneath the free edge of the ribs. There was some laceration of muscle fibers but no active bleeding. The peritoneum was not opened.

The obstetric significance of rectus hematoma is interesting. That it occurs rarely is evident, since there are but ten cases in Wohlgemuth's series. At first thought this is surprising, in view of the fact that in pregnancy the recti are more or less under tension and often diastatic. On the other hand, the patients are in the first half of life, before the tissues have become less elastic. The immediate causes, in most cases, are the same as those appearing in the nonpregnant. In Stoeckel's two cases the hemorrhage was occasioned by coughing. One patient was a quartipara in the sixth month of gestation; the other, a sextipara at term, labor not having begun.

Toft's patient, a tertipara, was 30 years old and pregnant six months. She had had bronchitis for several weeks and coughed freely at times. For three weeks there had been pain in the right lower abdomen. This suddenly became severe, and a resistant area developed to the right of the enlarged uterus. The next day there were anemia and signs of ileus. Rupture of the pregnant uterus was feared. At operation a cavity seven inches (213 cm.) long was exposed, filled with blood coagula, in the rectus sheath. The mass had ruptured intraperitoneally, with much free blood in the abdominal cavity. This is the only case reported in which the hematoma had broken through the serous coat.

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Schumann's patient, on the contrary, was a septipara, 44 years of age and obese. Strictly speaking this was not a case of spontaneous development but, because of its interesting diagnostic features, is added to the series. During the last pregnancy she sustained an injury, striking the edge of an open door heavily with the right side of the abdomen. Severe pain and disability followed, but the symptoms disappeared within a few days. Occasional attacks of pain in the right side persisted, and after labor a distinct mass was evident in the right lower quadrant. Within three months ascites developed, with dyspnea and edema of the legs. For the ascites, tapping had been done six times. A large tender mass was palpable in the right iliac fossa, but vaginal examination revealed no deep pelvic abnormalities. A provisional diagnosis was made of some rapidly growing form of generalized malignancy. After the ascitic fluid had been drained from the abdomen, no intraperitoneal disease was found. Within the substance of the rectus muscle lay a huge, old hematoma, after the removal of which the torn end of the deep epigastric artery was found. In this case the injury was due to external violence and occurred during pregnancy, but marked symptoms did not develop until after labor. It is the only case in which ascites occurred.

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Further evidence of the obstetric importance of this condition is seen in the fact that the majority of the patients not pregnant had borne children. Twelve were pregnant or recently delivered, at the time the rupture took place. Of the twenty-nine others, fifteen had had children, the parity of thirteen was not stated, and only one was set down as a nullipara.

SUMMARY

Twenty-nine of the patients were not pregnant, and twelve were pregnant or recently delivered, at the time of the rupture.

Of the twenty-nine who were not pregnant, thirteen were over 50 years of age, seven between 40 and 50, and six under 40. The ages of three were not stated.

Coughing due to bronchitis or influenza was given as the immediate causal factor in eleven cases, ordinary bodily movements in five, and unusual muscular exertion, in the form of hard work, in six. No apparent cause (muscular effort) was seen in three cases, and in two others there was a struggle to keep the balance in falling. Vomiting preceded the rupture in one patient, and in only one was participation in athletic exercise the factor.

Arteriosclerosis was a known condition in one patient, heart disease had been present in two, and hemiplegia had occurred sometime previously in one other.

Obesity was emphasized in nine of the reports, but in nineteen the constitutional build was not stated. One patient was not obese.

Fifteen of the patients had had children, most of them, several. In thirteen reports parity is not mentioned; in one only was the patient described as a nullipara.

One of the outstanding features is that of diagnosis, in most cases the true condition not being recognized prior to operation. In six cases the diagnosis was that of appendicitis; in seven, ovarian cyst with twisted pedicle; in two, appendicitis or ovarian cyst; in two, ovarian tumor, and in two, gallbladder disease. In three cases the preoperative diagnosis was not stated. In one case each the condition was thought to be mesenteric embolism, intraperitoneal disease, intestinal obstruction, abdominal hernia, desmoid tumor and ectopic pregnancy. In only three cases was rectus hematoma diagnosed, and in only two others was it suspected.

The treatment is conservative, if the hematoma is small. If the accumulation of blood is large enough to require evacuation, if it has become infected or if it has ruptured into the peritoneal cavity, operative intervention is indicated.

30 North Michigan Avenue.

INTENSITY OF HOOKWORM INFESTATION IN ALABAMA

ITS RELATIONSHIP TO RESIDENCE, OCCUPATION, AGE, SEX AND RACE *

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Hookworm infestation is one of the major public health problems of Alabama. Here the parasite has a wide distribution, for scarcely any county, town or village that has been studied has been found free of infestation. Among children of school age the incidence ranges from less than 5 per cent. in some of the larger towns to 95 per cent. in the heavily infested rural communities.

Formerly, every case of hookworm infestation has been considered hookworm disease, and the public health plan of organization has been to treat every child until he is entirely free from parasites.

Recent studies [1] have shown, however, that the important factor in hookworm disease control is not the incidence but the intensity of infestation from the point of view either of an individual or of a community. The great proportion of persons with hookworm infestation of slight degree suffer no measurable harm, and should be considered not cases of disease but carriers. Practical experience has shown that hookworm carriers should not, in fact, cannot be controlled by treatment, but can best be controlled, and eventually eliminated, by sanitation. Treatment should be used only to reduce the intensity of the infestation in actual cases of hookworm disease to an "economic cure"; i. e., to a carrier state.

This conception requires that a resurvey be made of hookworm infested areas to determine not the incidence, but the intensity, of hookworm infestation, in order that a practicable plan of hookworm control may be formulated which will be effective and economical.

The purpose of the present investigation was the determination of the intensity of hookworm infestation in Alabama. Since Alabama is similar to the whole group of south coastal plain states in climate, economic conditions, geological formation, and type and distribution of population, we hoped that the information obtained and the conclusions drawn might be of general application in these other Southern states.

METHODS OF PROCEDURE

An intensive study was first made of Covington County, in southern Alabama, which is a heavily infested area. The major portion of the work was devoted to the study of children of school age. Such an index would not be satisfactory in the tropics, where adults are more heavily infested than children, but in the southern United States the children of school age represent the most heavily infested age group. A study of the school children, therefore, does not give us a true cross section of the hookworm intensity of the Southern states, but represents a study of the most heavily infested age group.

The Willis salt flotation method was used in determining whether or not a person had hookworms. To

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* Studies from the Hookworm Field Research Unit of the International Health Board of the Rockefeller Foundation, Andalusia, Ala.

[1] Smillie, W. G., and Augustine, D. L.: The Effect of Varying Intensities of Hookworm Infestation on the Physical Condition of School Children, to be published.

determine the intensity of infestation, ova counts were made by the Stoll procedure on all positive stools. The children were grouped arbitrarily according to the estimated number of hookworms harbored, as follows:

Group 1, negative.
Group 2, very light infestation: from one to twenty-five worms.
Group 3, light infestation: from twenty-six to one hundred worms.
Group 4, moderate infestation: from 101 to 500 worms.
Group 5, heavy infestation: from 501 to 1,000 worms.
Group 6, very heavy infestation: from 1,001 to 3,000 worms.

Only one ova count was made on each child. A second or third ova count would have lowered the probable error of our grouping somewhat, though not to any great extent. In a previous experiment a large number of children were examined twice by the Stoll method, in November and again in February. In only a very few instances was there any variation in the grouping of those children that had received no hookworm treatment between the stool examinations.

The factors considered in relation to intensity of infestation were residence, occupation, age, sex and race.

Following the intensive study of a heavily infested area, a general survey was made of the whole state of Alabama. In this survey another factor was found to be of great importance in relation to intensity of infestation; namely, type of soil. The study of the relation of type of soil to hookworm intensity will be made the subject of a subsequent paper. In the following pages we shall discuss the relationship of each of the factors mentioned above to the degree of hookworm intensity, first in the heavily infested area of Covington County, south Alabama, and then in the state as a whole.

Table 1.—*Intensity of Infestation of 664 Rural and Urban White School Children in Covington County, South Alabama; All Ages (6-16 Years)*

Group	Description	Rural 444 Percentage of Children in Each Group	Urban 220 Percentage of Children in Each Group
1	No hookworms	3.6	55.9
2	Very light infestation, 1-25 hookworms	15.3	15.0
3	Light infestation, 26-100 hookworms	24.5	22.0
4	Moderate infestation, 101-500 hookworms	42.5	5.9
5	Heavy infestation, 501-1,000 hookworms	7.8	1.0
6	Very heavy infestation, 1,001-3,000 hookworms	6.3	0.0

OCCUPATION AND RESIDENCE IN RELATION TO HOOKWORM INTENSITY

The people of Alabama may be divided into two groups: first, those who live in villages and towns; and second, those who live in the rural districts and are engaged in agriculture or allied occupations. The school children have been used as the index of hookworm intensity. We have included in our urban group all school children living in even the small villages (250 or more). The rural children are those who live on scattered farms. It would be more concise to use the terms "farm children" and "village or town children."

The relative intensity of infestation of rural and urban white children in Covington County is shown in Table 1. Chart 1 presents the data of Table 1 in graphic form. The striking difference in the intensity of hookworm infestation of rural and town children in an area favorable to heavy hookworm infestation is clearly shown.

In Table 2 is given the intensity of infestation of negro children of Covington County. There is little difference in the intensity of the negro farm and village groups. In the villages and towns the negroes live in the outskirts and spend much time in the fields. There is much migration between farm and village, so that there is no real distinction between the rural and the urban child.

It will be noted from Table 2 that in Covington County, where there is a high intensity of infestation in white children, only a very small proportion of the negroes are heavily infested. This will be considered under a separate heading.

Table 3 shows that though the intensity of infestation in school children for the state as a whole is much less in Covington County, nevertheless, the relative degree of intensity in farm and village children is the same as in the heavily infested areas. The town children have either a light or no infestation, whereas a large proportion of the country children are infested, many of them having true hookworm disease. Some of the heavily infested town children have moved in from the country within two years. If these heavily infested cases were ruled out, the difference in intensity in rural and urban children would be still more striking.

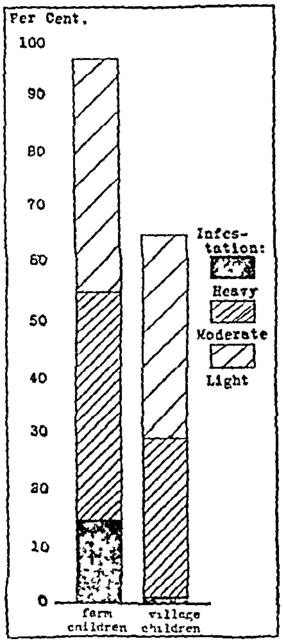

Chart 1.—Higher intensity of hookworm infestation of farm children than of village children of southern Alabama The differentiation in shading is the same in Charts 1, 2, 3 and 5

The towns do not have good sanitation throughout. The center of the villages may have sewerage, but more than one half of the homes have only open-back toilets. Wherever people live in close proximity, however, decency prevents a promiscuous pollution of the soil, as is the universal custom in the country, and thus village children have little opportunity to come in direct contact with infested soil.

Table 2—*Intensity of Hookworm Infestation in Negro Children of Covington County, South Alabama (6-16 Years)*

Group	Description	Rural 117 Percentage of Children in Each Group	Urban 97 Percentage of Children in Each Group
1	No hookworms	39.0	45.2
2	Very light infestation, 1-25 hookworms	30.9	28.3
3	Light infestation, 26-100 hookworms	20.6	18.9
4	Moderate infestation, 101-500 hookworms	8.0	3.2
5	Heavy infestation, 501-1,000 hookworms	0.9	2.0
6	Very heavy infestation, 1,001-3,000 hookworms	0.0	1.0

Though the economic status of the villages is somewhat better than that of the rural districts, it is customary for the children of the rich as well as those of the poor to go barefoot during the summer months, so that the wearing of shoes is not a factor in preventing infestation in the village children.

We may conclude from these tables that village and town children in Alabama have a much lower intensity of infestation than children living on the farms. Even in southern Alabama, where the soil is most favorable to development of hookworm larvae, less than 7 per cent. of the village children have an infestation greater than Group 3. Previous studies[1] have shown that these light infestations produce no measurable harm in growing children and are of little economic importance. But more than 50 per cent. of the rural children in the same area have true hookworm disease. From these tables, therefore, we may draw our first conclusion; namely, in Alabama, hookworm infestation of sufficient intensity to become an economic factor in the lives of the people is limited to persons living in the rural districts on the scattered farms. In general, persons in towns and even in small villages (250 population) do not have true hookworm disease.

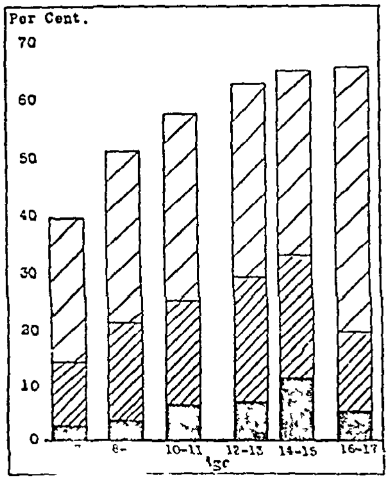

Chart 2.—Relation between age and intensity of hookworm infestation in 1,158 white children in Alabama

AGE IN RELATION TO INTENSITY OF HOOKWORM INFESTATION

The relationship between age and intensity of hookworm infestation is shown in Table 4. This table includes white children only and represents samples taken from all parts of Alabama. Chart 2 represents Table 4 in graphic form

Table 3.—*Difference of Hookworm Intensity in Farm and Village Children in Alabama as a Whole; 1,284 White Children and 555 Negro Children*

		White		Colored	
Group	Description	Rural Per Cent	Urban Per Cent	Rural Per Cent	Urban Per Cent.
1	No hookworms	37.1	63.8	76.1	64.8
2	Very light infestation, 1 25 hookworms	12.6	11.9	13.8	19.1
3	Light infestation, 26 100 hookworms	16.7	17.7	6.1	10.4
4	Moderate infestation, 101 500 hookworms	26.0	5.1	3.0	4.3
5	Heavy infestation, 501 1,000 hookwoms	4.1	1.0	0.3	1.2
6	Very heavy infestation, 1,001-3,000 hookworms	3.3	0.7	0.3	0.0

If we consider incidence of infestation only, Table 4 shows that 38 per cent of the 6 to 7 year old children are infested, and that there is a gradual increase in the percentage of infested children which reaches a maximum in the oldest age group, from 16 to 17 years. If, as formerly, every case of infestation is to be considered hookworm disease, then our most serious condition would be found in the highest age group of the series. But percentage of infestation gives us a false conception of true conditions. When we study the intensity curve and not the incidence curve, we find that only a very small proportion of 6 to 7 year old children have true hookworm disease. The intensity increases gradually year by year, but the maximum is reached not in the 16 to 17 age period but in the 14 to 15 year age period, and there occurs a rapid decline in hookworm intensity in the 16 to 17 age group.

This type of intensity curve in relation to age has the same tendency in all the groups studied. This is shown in Table 5, colored children of Alabama; Table 6, rural white children of Covington County only; Table 7, urban white children of Covington County, and Table 8, negro children of Covington County. Chart 3 is a graphic representation of Table 6 A.

Table 4.—*Relation Between Age and Intensity of Hookworm Infestation in 1,158 White Children of Alabama, Both Urban and Rural Groups, Showing Gradual Increase of Infestation Until About the Fourteenth Year, Followed by a Rapid Decline*

		Age					
		6 7 Years	8 9 Years	10 11 Years	12-13 Years	14 15 Years	16 17 Years
Group		Per Cent	Per Cent	Per Cent	Per Cent.	Per Cent.	Per Cent
6	Very heavy infestation	0.8	1.0	3.2	2.3	5.0	0
5	Heavy infestation. ..	1.6	1.7	2.9	4.2	6.4	5.0
4	Moderate infestation..	11.5	17.6	18.2	22.1	21.6	14.0
3	Light infestation. ...	9.9	15.2	19.7	16.1	13.7	18.0
2	Very light infestation.	14.4	14.8	13.1	17.5	18.0	28.2
1	Negatives	61.8	49.5	42.7	37.4	35.2	34.6

Table 5.—*Relation Between Age and Intensity of Hookworm Infestation in 555 Colored Children of Alabama, Both Urban and Rural Groups*

		Age					
		6 7 Years	8 9 Years	10-11 Years	12 13 Years	14-15 Years	16 17 Years
Intensity	Group	Per Cent	Per Cent	Per Cent.	Per Cent.	Per Cent	Per Cent.
Very heavy infestation	6	0	0	7	0	0	0
Heavy infestation. ..	5	0	0	7	0	2.2	0
Moderate infestation.	4	1.4	4.7	1.5	3.3	4.5	2.7
Light infestation .	3	4.3	7.5	6.0	12.4	6.7	22.0
Very light infestation	2	15.7	11.3	17.3	12.4	21.3	8.3
Negative . .	1	78.5	76.4	73.6	71.9	65.1	66.6

Table 6.—*Relation Between Age and Intensity of Infestation in White Children of Covington County Only*

A Rural 444 Cases

		Age					
		6 7 Years	8 9 Years	10 11 Years	12-13 Years	14-15 Years	16 17 Years
Intensity	Group	Per Cent	Per Cent	Per Cent.	Per Cent	Per Cent.	Per Cent.
Very heavy infestation.	6	2.4	3.1	7.8	6.9	10.6	0
Heavy infestation. .. .	5	4.8	4.2	5.0	10.0	15.0	11.7
Moderate infestation .	4	39.7	46.3	41.0	47.0	37.8	26.0
Light infestation. .	3	20.5	27.4	30.0	19.5	19.5	2[illegible].0
Very light infestation	2	26.5	14.7	12.0	14.9	14.9	26.5
Negative	1	6.0	4.2	4.3	1.7	2.2	6.8

B Urban 220 Cases

Very heavy infestation.	6	0	0	0	0	0	0
Heavy infestation . ..	5	0	1.0	0	0	0	0
Moderate infestation .	4	0	6.5	4.4	11.7	0	0
Light infestation	3	12.0	19.6	22.0	38.0	0	0
Very light infestation .	2	8.0	16.3	11.9	23.5	0	0
Negative . . .	1	79.0	55.4	61.0	26.4	100	100

Adult findings are not included in this analysis. We have made a large number of examinations of adults, and with one or two rare exceptions we have found that adults, even in a zone of heavily infested soil, have either no hookworms or at most a very light infestation. The same is true of children under 6 years of age. Light infestation in rural children below school age is common, but heavy infestation in little children is rare.

Table 7.—*Relation Between Age and Intensity of Infestation in 212 Colored Children of Covington County Only, Combined Rural and Urban**

		Age					
		6-7 Years	8-9 Years	10-11 Years	12-13 Years	14-15 Years	16-17 Years
Intensity	Group	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
Very heavy infestation.	6	0	0	0	0	0	0
Heavy infestation......	5	0	0	1.8	2.0	6.6	0
Moderate infestation...	4	3.4	10.8	3.7	6.4	10.0	5.5
Light infestation.......	3	7.4	16.2	13.2	30.0	16.6	44.4
Very light infestation..	2	33.4	27.0	32.0	25.5	36.6	22.0
Negative	1	65.6	46.0	49.0	36.2	30.0	27.7

* Because of the small number of cases and the small difference in the intensity in rural and village children, the cases were combined in one group.

Table 8.—*Hookworm Incidence in Relation to Age in Brazil and Southern States of North America**

	Average Number of Hookworms	
	Brazil Worm Counts	Alabama, Whites, Only, Stoll Ova Count Estimation
4- 5 years........	0.5	...
6- 7 years........	14	6.6
8- 9 years........	26	91
10-11 years........	85	138
12-13 years........	169	144
14-15 years........	159	198†
16-17 years........	119	94
18-19 years........	185	24
20-29 years........	165	Very light infection only
30-39 years........	175	Very light infection only
40-49 years........	163	Very light infection only
50-59 years........	64	Very light infection only

* This table illustrates two important facts: 1. Hookworm infestation is slowly acquired and slowly lost. 2. The single factor of wearing shoes may be the determining one in the intensity of hookworm infestation.
† Shoes worn from this time.

The data presented are sufficient to indicate the trend of the age curve of intensity of infestation in Alabama. In Chart 4 we have superimposed the extended intensity curve of Alabama on the intensity curve of the various age groups of Brazil. The Brazilian curve is taken from data presented in Monograph 17 of the Rockefeller Institute for Medical Research.

The two curves correspond closely until the 16-17 age period, when the Alabama curve reaches a maximum followed by a rapid decrease in intensity. The Brazilian curve reaches its maximum at about 24 years, and remains quite constant for a long period. The remarkable universal decrease of hookworm intensity in Alabama children is due to the custom of beginning the constant use of shoes at about 14 years among the whites, a little later among the negroes. No new infestation is acquired, and the old parasites gradually die out in from three to five years. This single factor of wearing shoes is in all probability largely responsible for the absence of heavy infestations in rural adults in Alabama.

These tables substantiate the general law, which was suggested to us by our Brazilian studies;[2] namely, that hookworm infestation is slowly acquired and slowly lost. Heavy hookworm infestation is not acquired in a day or following a single exposure, but is gradually accumulated over a period of years, the old worms slowly dying out and new ones being gradually acquired. As a general rule, a heavily infested case represents long and continuous exposure to infested soil. The tables also show that so simple a factor as wearing shoes, even though they may be rough and coarse, may be the determining factor between severe disease or simple light infestations.

SEX IN RELATION TO INTENSITY OF HOOKWORM INFESTATION

Our studies have shown that there is little or no difference in the intensity of infestation of boys and girls in Alabama. This is to be expected, as the sanitary habits and customs and the mode of life of rural boys and girls are similar up to the age of maturity. Our Brazilian studies showed a corresponding similarity in the intensity of infestation of the two sexes up to adult life. There was a marked difference in intensity of infestation of adults of Brazil, the men having a much heavier infestation than the women. A similar condition was noted by Warren and Carr[3] in Mexico. This difference in intensity between the sexes in adult life does not occur in Alabama because both boys and girls begin to wear shoes at about the same age, and both sexes have a very low intensity in adult life.

From the facts at hand, we may now extend our first conclusion and assert that hookworm disease as an economic burden on the life of the people of Alabama is limited to the rural children of school age.

RACE IN RELATION TO INTENSITY OF HOOKWORM INFESTATION

There is a marked difference in the intensity of hookworm infestation in the white and negro races in Alabama. The Southern states are an ideal place to make such a study, particularly the rural districts of southern Alabama, where conditions are favorable for a high intensity of infestation. Here the two races live side by side on adjoining farms, under very similar economic and sanitary conditions, yet sharply separated by racial distinctions. In Table 9 we have compared the intensity of hookworm infestation of white and negro children in six different areas in Alabama. Chart 5 is a graphic representation of Table 9. Table 10 compares the intensity of infestation of rural white and negro children of a heavily infested area. Here the same difference in the two races is noted.

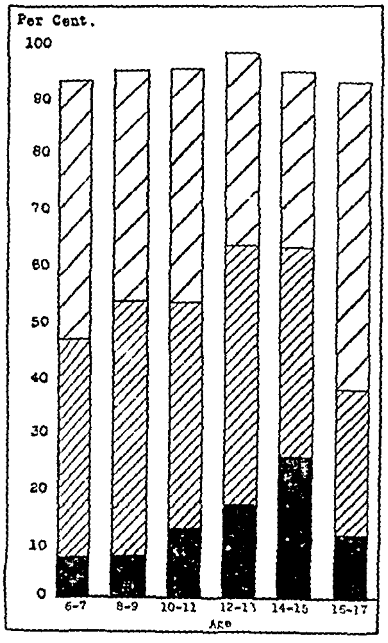

Chart 3.—Relation between age and intensity of infestation in white children in Covington County only; 444 rural children.

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[2] Smillie, W. G.: Studies of Hookworm Infection in Brazil, Monographs of the Rockefeller Institute, No. 17, 1922.

[3] Personal communication to the authors.

Knowlton,[4] in his hookworm studies at Camp Jackson, S. C., also noted lighter hookworm infestations among the negro than white soldiers from the Carolinas and Florida, using the worm count method. Among sixty-nine white and eighteen colored cases, the average number of worms obtained from the whites was 155.3 and from the colored 38.3, which indicates an infestation about four times greater among the white than among the colored soldiers.

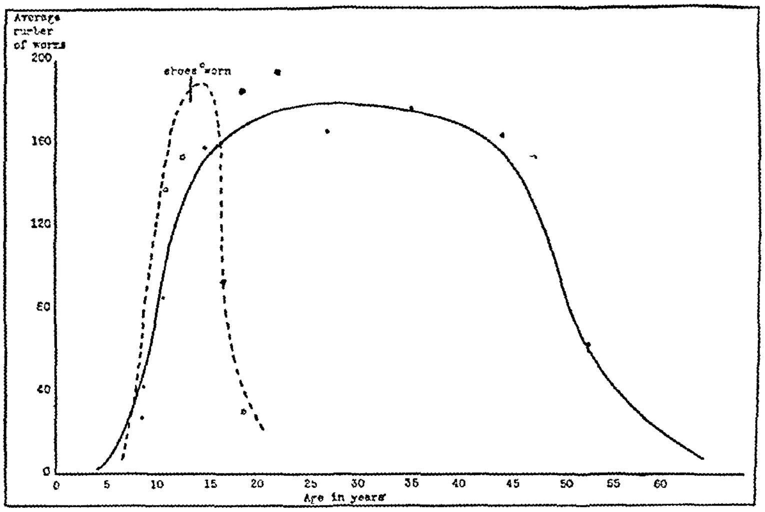

Chart 4—Hookworm incidence in relation to age, comparing Brazil and Southern states of North America. solid line, Brazil, broken line, Southern states

We have no explanation of the fact that negro children have a much lighter infestation than the white children. Our belief is that it is due to a physiologic difference in the two races, namely, the much greater thickness of the epidermis of the negro. Dr. Darling[3] feels that it may be due to slightly different sanitary customs. Dr. Payne[3] believes that it may be due to racial immunity. Rincon,[5] in Colombia, found a higher infestation rate in whites. His results are probably due to better social and economic status and better living condition of the whites in Colombia.

TABLE 9.—*Intensity of Hookworm Infestation in Relation to Race in Six Different Counties in Alabama—Rural Children*

Group	Intensity Group	White, 887 Cases, Percentage of Total Cases	Negroes, 375 Cases, Percentage of Total Cases
1	Negative	37.1	79.5
2	Very light infestation, 1-25 hookworms	12.6	10.1
3	Light infestation, 26-100 hookworms	16.6	6.5
4	Moderate infestation, 101-500 hookworms	25.9	3.5
5	Heavy infestation, 501-1,000 hookworms	4.1	0.2
6	Very heavy infestation, 1,001-3,000 hookworms	3.3	0.2

TABLE 10—*Comparison of Intensity of Hookworm Infestation in the White and Negro Rural School Children of Covington County, Southern Alabama (6-16 Years of Age)*

Group	Description	White, 444 Children, Percentage of Cases	Negroes 117 Children, Percentage of Cases
1	Negative	3.6	39.0
2	Very light infestation, 1-25 hookworms	15.3	30.9
3	Light infestation, 26-100 hookworms	24.5	20.6
4	Moderate infestation, 101-500 hookworms	42.5	8.0
5	Heavy infestation, 501-1,000 hookworms	7.8	0.9
6	Very heavy infestation, 1,001-3,000 hookworms	6.3	0.0

Our results show clearly that when the two races are living under almost identical conditions of sanitation, economic status, occupation, soil, temperature, etc., the whites may have a heavy infestation, whereas the negroes have a very light infestation. In fact, we have found scarcely a case of infestation in a negro in Alabama which was severe enough to produce clinical symptoms. These observations on hookworm infestation in white and negro children have suggested several lines of investigation to us, which are now being pursued.

COMMENT

From the evidence submitted we believe that we are justified in the conclusion that true hookworm disease as a real economic menace to the welfare of the people in Alabama is limited to the rural white children of school age. Hookworm infestation is widely distributed among all age, social, economic and racial groups. The persons with light infestations are not to be ignored, for they are hookworm carriers and are potential sources of danger to the community. They are not cases of hookworm disease, however, and should not be considered as such. If these facts are true for Alabama, they are probably also true for the other coastal plain Southern states having a similar type and distribution of population, and similar climatological and geological conditions.

This conception, if accepted, logically requires that we modify our plan of hookworm control in the Southern United States. Hookworm treatment should not be given indiscriminately to every person who shows a positive stool. It is unjustifiable and unfair to submit such a person to the discomfort of a rigorous hookworm treatment when he is harboring only a small number of hookworms which are doing him no measurable harm. It is poor public health organization to waste time and money on treatment of a community for hookworm infestation when that infestation is causing the community no economic loss.

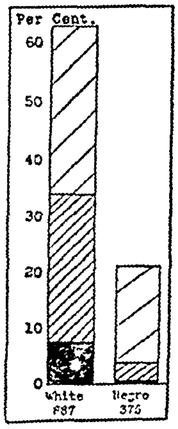

Chart 5 — Intensity of hookworm infestation in relation to color among the rural children in six different counties of Alabama

Hookworm treatment should be employed as a weapon to combat and control true hookworm disease. It should not necessarily be pushed until all persons treated reach the point of microscopic cure. If one standard[6] treatment is given to moderately infested patients and two such treatments to those heavily infested, the group infestation will be reduced to the point of economic cure, in that the intensity of infestation of the treated patients becomes so light that they are carriers and do not have true cases of hookworm disease.

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[4] Knowlton, R H. Hookworm Infection Among Troops: Treatment with Oil of Chenopodium, J A. M. A **72**: 701-703 (March 8) 1919.

[5] Rincon, J. D: Anotacione sobre la anemia tropical en Colombia considerada como problema social y como entided patologica, Estudo de Tesis, Facultad de Medicina Republica de Colombia, 1924

[6] A standard hookworm treatment is considered as a treatment that will remove from 90 to 95 per cent of all hookworms harbored, in a single administration The effective dose of thymol, betanaphthol, oil of chenopodium, carbon tetrachlorid and ascaridol has been determined

Sanitation and education must be the chief modes of control of the carrier. Long experience by many workers has clearly shown that treatment alone is of little avail in the control of incidence of infestation in an area favorable to development of hookworm larvae.

PLAN FOR HOOKWORM CONTROL IN THE SOUTHERN UNITED STATES

The logical plan of public health procedure in hookworm control in the Southern states therefore is to:

1. Control the carrier. Proceed methodically and systematically in the education of the people in regard to the mode of hookworm infestation, and push vigorously the installation of sanitary toilets throughout the rural areas of the Southern states.

2. Limit treatment to actual cases of hookworm disease in rural white school children. This can readily be done by making an ova count estimation of intensity of infestation of rural white school children as a routine part of the regular annual or biannual examination of school children. All persons with light infestations may be advised that they are carriers but do not need treatment. Hookworm treatment need be administered only to those with moderate or heavy infestations. One standard treatment may be administered to children falling in Group 4, two treatments to those heavily infested, Groups 5 and 6.

If such a plan were followed, hookworm disease as a real menace to the people of the Southern states could readily be kept under control by the public health organizations already existing in the various states as a part of the routine procedure in the medical examination and correction of defects of school children.

This method or any other method of treatment will not reduce the incidence of infestation for any considerable period of time. Hookworms will not disappear from the Southern states until the habits and sanitary customs of the rural people are completely changed. Hookworm incidence will diminish slowly year by year as the general principles of sanitation radiate from the towns and villages to the remote rural districts. But only with the improvement of economic conditions in the rural sections of the South, and betterment in educational advantages for the rural children, will it be possible to win complete control over hookworm infestation in the Southern United States.

61 Broadway.

The Surgeon.—There is an unexplainable mental process that precedes what is known as a surgical inspiration, or to use an undergraduate's vulgarism, a surgical "hunch." This means nothing more than that after blindly puzzling and agonizing over a difficult problem in the effort to determine just what course to pursue, there is a sudden and unaccountable clearing of obscurities, and an operator enters upon his task with a conviction of just what he will encounter and just what will happen, as though he were possessed of a sixth sense. I think most surgeons are more or less conscious of this state of mental preparedness for what to others may seem a desperate throw. But there is nothing uncanny about it; it is little more than the subconscious fusion of past experience which concentration brings to bear on a given problem. And as these inspirations in difficult cases are the outgrowth of personal and repeated bedside studies of the patient whose equation also enters into them, he who neglects this portion of his work and merely operates at the behest of another misses much.—Harvey Cushing.

COMPOSITION OF IMPORTED BOTTLED WATERS*

A. E. MIX AND J. W. SALE
WASHINGTON, D. C.

During the fifteen years prior to the beginning of the World War in 1914, the annual receipts of foreign mineral waters amounted to about 3,000,000 gallons, valued at about $1,000,000. There was a marked decrease in receipts during the World War and for several years thereafter, but since 1920 there has been a gradual increase so that at the present time we are receiving about one-fourth the quantity imported prior to the World War. During the twelve months ending in June, 1924, there were imported 753,831 gallons, valued at $281,402.[1] The value of domestic waters sold annually during the last twenty-five years has remained about the same, that is, in the neighborhood of $5,000,000, so that possibly the value of imported waters may in the course of time rise to the former figure of $1,000,000 annually.

In a study of the composition of a large number of mineral waters, it is necessary to classify or group them according to the kind and quantity of dissolved mineral matter contained in them. A number of elaborate and no doubt excellent scientific systems of classification have been devised and are used to a limited extent, but none of them seemed to be suited to our present purpose, which is to classify the mineral waters imported into the United States in a manner which will be readily understood by physicians and others who have not been trained to interpret water analyses expressed in the form of acid and basic ions. It should not be inferred that we do not approve of classification of waters based on acid and basic ions or radicals, but it has been our experience in connection with the enforcement of the Federal Food and Drugs Act that such classifications are not well understood except by chemists. In all of our legal work we have found it necessary to report our analyses in grains per U. S. gallon or grains per U. S. quart of salts, which have been calculated by combining the acid and basic ions according to a definite procedure which will be described later.

In our examination of hundreds of foreign and domestic waters, we have observed that most of them can be placed in one or another of the following five classes, when the analyses are expressed in the form of salts:

Class 1. Dolomitic limestone predominating.
Class 2. Vichy type, sodium bicarbonate predominating.
Class 3. Sodium chlorid predominating.
Class 4. Epsom and Glauber's salts, one or both predominating.
Class 5. Chalybeate or iron type.

The names of these five classes indicate quite clearly the general character of the mineral waters placed in them, but they do not show the approximate quantity of the dissolved mineral matter in a given quantity of the water. Therefore, the five classes described above have been further subdivided into (A) those waters which contain less than 1,000 mg. per liter (or less than 58 grains per U. S. gallon); (B) from 1,000 to 5,000 mg. per liter (or from 58 to 292 grains per U. S. gallon); (C) from 5,000 to 10,000 mg. per liter

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* From the Water and Beverage Laboratory, Bureau of Chemistry, U. S. Department of Agriculture.

[1] Monthly Summary of Foreign Commerce, Part 1, June, 1924.

(or from 292 to 584 grains per U. S. gallon); (D) from 10,000 to 20,000 mg. per liter (or from 584 to 1,168 grains per U. S. gallon); (E) over 20,000 mg. per liter (or over 1,168 grains per U. S. gallon).

In further explanation of the five classes enumerated above, we might point out that the mineral matter in the waters in Class 1 consists chiefly of limestone (calcium carbonate) or of dolomitic limestone (calcium, magnesium carbonate) held in solution by carbon dioxid, which is usually present in sufficient quantity to prevent precipitation, especially when the bottles are kept closed. Waters of this class are usually rather lightly mineralized and are quite generally employed whenever light, mildly alkaline waters are indicated.

Class 2 comprises the Vichy type of waters, in which bicarbonate of soda is the predominating mineral constituent. They usually contain also a considerable amount of sodium chlorid, together with smaller amounts of a great variety of other salts.

Class 3 consists of waters in which sodium chlorid predominates. Some of the waters in this class, like those in Class 4, are very highly mineralized.

Class 4 comprises those waters in which the dissolved mineral matter consists chiefly of Epsom and Glauber's salts. They are frequently called bitter waters.

Class 5 consists of waters that contain substantial amounts of iron salts. We have included in this class all of those waters which contain 10 mg. or more per liter (or $^{58}/_{100}$ grain or more per U. S. gallon) of iron salts. These waters are termed chalybeate or red waters. The iron is present usually as ferrous bicarbonate and is held in solution by carbon dioxid. When the carbon dioxid escapes, the iron precipitates in the form of ferric oxid. In order to keep bottled waters of this type clear and sparkling it is necessary to bottle them with an abundance of carbon dioxid and to exclude carefully all traces of oxygen.

We have given no consideration to content of radioactivity, for the reason that we have never examined a natural water which contained more than infinitesimal amounts of radium.[2] Also, we have given no consideration to the presence of traces of iodin, bromin, barium and arsenic, which are present in a limited number of the more highly mineralized waters.

The principal acid and basic ions of the mineral waters which are classified in this report have all been combined according to the procedure recommended by the Association of Official Agricultural Chemists,[3] which in part is as follows: Assign sodium, magnesium, calcium and iron in the order given, to the acid ions in the following order: chlorid, sulphate, carbonate and bicarbonate. Therefore, the analyses of these mineral waters are comparable with one another, and subject to classification. These waters have all been analyzed in the Water and Beverage Laboratory of the Bureau of Chemistry, the samples having been collected over a period of years from shipments offered for entry into the United States.

A list of all foreign waters analyzed by the Bureau of Chemistry since the beginning of the enforcement of the federal Food and Drugs Act in 1907, classified in the manner described above, is set forth below.

IMPORTED MINERAL WATERS CLASSIFIED ACCORDING TO CHEMICAL COMPOSITION

Class 1.—*Dolomitic Limestone Type* (predominating constituents being the bicarbonates of calcium and magnesium)

A. Total dissolved mineral matter less than 1,000 mg. per liter (or less than 58 grains per U. S. gallon).

Borgofranco	Ivrea, Italy
Brambacher (Shiller) (also Class 5 A)	Brambach, Germany
Cachat (Evian)	Evian-les-Bains, France
Corallo	Leghorn, Italy
Corticello	Bologna, Italy
Deux Reines	Aix-les-Bains, France
Excelsiorquelle (also Class 5 A)	Bohemia, Czechoslovakia
Fiuggi	Rome, Italy
Graus	Barcelona, Spain
Harzer Königsbrunnen (also Class 5 A)	Goslar, Germany
Harzer Sauerbrun Grauhof (also Class 4 A)	Goslar, Germany
Harzer Victoria	Goslar, Germany
Hirone	Osaka, Japan
La Cotorra	Havana, Cuba
La Francesca	Rionero, Italy
Lourdes	Lourdes, France
Monopole (de la Ville)	———, Belgium
Monticchio Gaudianello	Potenza, Italy
Neudorfer (Duke of Beaufort)	Carlsbad, Czechoslovakia
Nocera Umbra Angelica	Nocera Umbra, Italy
Pejo (also Class 5 A)	Trentino, Italy
Perrier	Vergeze, France
San Miguel, La Salud	Azores, Portugal
Solares (also Class 3 A)	Madrid, Spain
St. Simon (also Class 2 A)	Aix-les-Bains, France
Wernarzer	Brückenau, Germany

B. Total dissolved mineral matter from 1,000 to 5,000 mg. per liter (or from 58 to 292 grains per U. S. gallon).

Ausonia (Bognanco)	Domodossola, Italy
Badoit	St. Galmier (Loire), France
Cambrunnen	Hamburg, Germany
Castellammare di Stabia	Castellammare di Stabia, Italy
Claudia	Rome, Italy
Eptinger	Eptingen, Switzerland
Ferrarelle	Riardo (Caserta), Italy
Flavia	Fiume, Italy
Godesberger (also Class 2 B)	Godesberg, Germany
Hersfelder Lullusbrunnen	Hersfeld, Germany
Hollandia (also Class 3 B)	Haarlem, Netherlands
Italiana (Elena)	Rionero, Italy
L'Insuperabile (Three Star) (also Class 2 B)	Rionero, Italy
Maternidad (also Class 4 B)	Havana, Cuba
Minerva (also Class 3 B)	Naples, Italy
Montecatini Tettucio (also Class 3 B)	Montecatini (Lucca), Italy
Montecatini Torretta (also Class 3 B)	Montecatini (Lucca), Italy
Monticchio (S. Maria de Luco)	Potenza, Italy
Neuselters (also Class 3 B)	Nassau, Germany
Orezza (also Class 5 B)	Corsica, France
Paradiso	Arezzo, Italy
Pliniana	Caserta, Italy
Polenai (also Class 2 B)	Czechoslovakia (formerly Szolyva, Austria-Hungary)
Radeiner Heilquelle (also Class 2 B)	Steiermark, Austria
Roccallaura (also Class 4 B)	Barcelona, Spain
Rudolfsquelle (also Class 5 B)	Czechoslovakia

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[2] Skinner, W. W., and Sale, J. W.: Radioactivity of Miscellaneous Waters Examined in the Bureau of Chemistry, J. Indust. and Engin. Chem. **14**: 949 (Oct.) 1922.

[3] J. A. Off. Agric. Chemists **5**: 385, 1922.

Salvatore	Caserta, Italy
Salvator	Eperjes, Czechoslovakia
Sangemini	Naples, Italy
San Hilario Sacalm	Gerona, Spain
Santos (also Class 5 B)	Brzvany u Loun, Czechoslovakia
Sodener Warmbrunnen III	Taunus, Germany
Telese	Solopaca, Italy
Traficante	Rionero, Italy
Uliveto	Pisa, Italy
Verniere	Lamalou-les-Bains (Herault), France
Vitolo Salerno	Salerno, Italy
Vittel, Source Grand	Vosges, France
Vittel, Source Hepar	Vosges, France
Vittel, Source Salee	Vosges, France
Weinbrunnen (also Class 5 B)	Langenschwalb, Germany
Wildunger-Königsquelle	Wildungen, Germany
Wildungen-Helenen Quelle (also Class 3 B)	Wildungen, Germany
Wildungen-Georg Victor Quelle	Wildungen, Germany

CLASS 2.—*Vichy Type* (predominating constituents, bicarbonate of sodium with more or less *chlorid of sodium*, etc.)

A. Total dissolved mineral matter less than 1,000 mg. per liter (or less than 58 grains per U. S. gallon).

Borines	Barcelona, Spain
Caxambu (Empreza)	Geraes, Brazil
Neuenahrer Sprudel	Neuenahr, Germany
Plombieres (also Class 4 A)	Plombieres, France
Porla (also Class 5 A)	Laxa, Sweden
Ramlosa	Ramlosa Brunn, Sweden
St. Simon (also Class 1 A)	Aix-les-Bains, France
Teplitz	Bohemia, Czechoslovakia

B. Total dissolved mineral matter from 1,000 to 5,000 mg. per liter (or from 58 to 292 grains per U. S. gallon).

Apollinaris	Neuenahr, Germany
Arienheller	Rheinbrohl, Germany
Bilin	Bilin, Czechoslovakia
Brault	Sail-sous-Couzan (Loire), France
Bullidors Els	Barcelona, Spain
Cabrierora	Orense, Spain
Ems Kranchen	Ems, Germany
Espido (Fuente Nueva de Verin)	Verin, Spain
Fachingen	Nassau, Germany
Fonte Italiana	Rionero, Italy
Franzens (also Classes 4 B and 5 B)	Franzensbad, Czechoslovakia
Glashager	Doberan, Germany
Godesberger (also Class 1 B)	Godesberg, Germany
Imperial Honningen (also Class 3 B)	Coblenz, Germany
Kaiserbrunnen (also Class 3 B)	Offenbach, Germany
Klösterle Sauerbrunn	*Bohemia, Czechoslovakia*
La Bourboule Choussy (also Class 3 B)	Puy-de-Dome, France
La Bourboule Perriere (also Class 3 B)	Puy-de-Dome, France
L'Insuperabile (Three Star) (also Class 1 B)	Rionero, Italy
Mattoni's Gieshubler Sauerbrunnen	Bohemia, Czechoslovakia
Mondariz	Mondariz, Spain
Monteverdi	Siena, Italy
Pedras Salgadas	Rio de Janeiro, Brazil
Polenai (also Class 1 B)	Czechoslovakia (formerly Szolyva, Austria-Hungary)
Radeiner Königsquelle	Steiermark, Austria
Radeiner Heilquelle (also Class 1 B)	Steiermark, Austria
Rhenser (also Classes 3 B and 5 B)	Rhens, Germany
Radiovka	Bohemia, Czechoslovakia
Rocafort	Lerida, Spain
Sabroso	Vidago, Portugal
Saint Mart (also Classes 3 B and 5 B)	Royat, France
Salus Vidago	Vidago, Portugal
Salzbrunnen Oberbrunnen	Silesia, Czechoslovakia
Stahlquelle Franzensbad (also Class 5 B)	Bohemia, Czechoslovakia
Vichy Andreau	Vichy, France
Vichy Catalan	Vichy, France
Vichy Dubois	Vichy, France
Vichy Grande Grille	Vichy, France
Vichy Grande Source	Vichy, France
Vichy Lardy	Vichy, France
Victoria Oberlanstein	Ems, Germany
Vidago	Vidago, Portugal
Vilajuiga	*Gerona, Spain*
Villaza	Orense, Spain

C. Total dissolved mineral matter from 5,000 to 10,000 mg. per liter (or from 292 to 584 grains per U. S. gallon).

Bikszadi	Bikszad, Roumania
Ciappazzi	Messina, Italy
Maria (also Class 5 C)	*Szatmar Nemeti, Roumania*
Margit (also Class 5 C)	Czechoslovakia (formerly Szolyva, Austria-Hungary)
Polenai (also Class 1 B)	Czechoslovakia (formerly Szolyva, Austria-Hungary)
Radeiner (Giselaquelle)	Steiermark, Austria
Radeiner Heilquelle (also Class 1 B)	Steiermark, Austria
Saint Stephans (Woda Stefana) (also Classes 3 C and 5 C)	Dunajec, Poland
Saint Rosalia	Formerly Gabernik-Celje, Jugoslavia
San Leopoldo (also Class 4 C)	Montecatini (Lucca), Italy
Szolyvai	Czechoslovakia (formerly Szolyva, Austria-Hungary)
Vals Perle No. 3 (also Class 5 C)	Vals-les-Bains, France
Vichy Celestins	Vichy, France
Vichy Chalet	Vichy, France
Vichy Chomel	Vichy, France
Vichy Clement	Vichy, France
Vichy Desiree (also Class 4 C)	Vichy, France
Vichy Etoiles	Vichy, France
Vichy Hopital	Vichy, France
Vichy La Reconstituante	Vichy, France
Vichy Richelieu	Vichy, France
Vichy St. Louis	Vichy, France
Vichy Vercingetorix	Vichy, France

CLASS 3.—*Sodium Chlorid Type* (predominating constituent is chlorid of sodium)

A. Total dissolved mineral matter less than 1,000 mg. per liter (or less than 58 grains per U. S. gallon).

Minville (also Class 4 A)	Bayonne, France
Montecatini Rinfresco	Montecatini (Lucca), Italy
Solares (also Class 1 A)	Madrid, Spain

B. Total dissolved mineral matter from 1,000 to 5,000 mg. per liter (or from 58 to 292 grains per U. S. gallon).

Acqua Acidula	Naples, Italy
Hollandia (also Class 1 B)	Haarlem, Netherlands
Imperial Honningen (also Class 2 B)	Coblenz, Germany
Kaiserbrunnen (also Class 2 B)	Offenbach, Germany
La Bourboule Choussy (also Class 2 B)	Puy-de-Dome, France

La Bourboule Perriere (also Class 2 B)	Puy-de-Dome, France
Loosequelle	Bohemia, Czechoslovakia
Loutraki	Loutraki, Greece
Minerva (also Class 1 B)	Naples, Italy
Mirtina (also Classes 4 B and 5 B)	Isola, Ischia, Italy
Montecatini Tettucio (also Class 1 B)	Montecatini (Lucca), Italy
Montecatini Torretta (also Class 1 B)	Montecatini (Lucca), Italy
Monticchio, Santa Maria	Potenza, Italy
Neuselters (also Class 1 B)	Nassau, Germany
Rhenser (also Classes 2 B and 5 B)	Rhens, Germany
Saint Mart (also Classes 2 B and 5 B)	Royat, France
Salina (also Class 4 B)	Belfast, Ireland
Wildegg	Wildegg, Switzerland
Wildungen-Helenen Quelle (also Class 1 B)	Wildungen, Germany

C. Total dissolved mineral matter from 5,000 to 10,000 mg. per liter (or from 292 to 584 grains per U. S. gallon).

Cestona	Guipuzcoa, Spain
Corallo (Aqua Santa)	Sciacca, Italy
Ferrata	Sciacca, Italy
Kissingen (Rakoczy)	Kissingen, Germany
Maria (also Class 2 C)	Szatmar Nemeti, Roumania
Saint Stephans (Woda Stefana) (also Classes 2 C and 5 C)	Dunajec, Poland
Sodener Warmbrunnen III	Taunus, Germany

D. Total dissolved mineral matter from 10,000 to 20,000 mg. per liter (or from 584 to 1,168 grains per U. S. gallon).

Calcium-Sen	Fukuoka Kyushu, Japan
Karlsquelle	Bohemia, Czechoslovakia
Kreutznacher	Kreuznach, Germany
Maxquelle (Arsenwasser) (also Class 5 D)	Dürkheim, Germany
Molinelli	Sciacca, Italy
Montecatini Regina	Montecatini (Lucca), Italy
Montecatini Tamerici	Montecatini (Lucca), Italy
Mühlbrunnen (also Class 4 D)	*Bohemia, Czechoslovakia*
Sophienquelle	Salzuflen, Germany

E. Total dissolved mineral matter over 20,000 mg. per liter (or over 1,168 grains per U. S. gallon).

Friedrichshaller (Bitter Wasser) (also Class 4 E)	Saxe-Meiningen, Germany
Karlsquelle (also Class 4 E)	Württemberg, Germany
Mira (also Class 4 E)	Jaszkarajeno, Hungary
Rio Salzo (Iodo-Arsenicale)	Bertinoro, Italy
Vittoria (also Class 4 E)	Leghorn, Italy

CLASS 4.—*Glauber's and Epsom Salts Type* (predominating constituents, sulphates of sodium and magnesium)

A. Total dissolved mineral matter less than 1,000 mg. per liter (or less than 58 grains per U. S. gallon).

Harzer Sauerbrun' Grauhof (also Class 1 A)	Goslar, Germany
Lauchstädter	Merseburg, Germany
Minville (also Class 3 A)	Bayonne, France
Plombieres (also Class 2 A)	Plombieres, France
St. Colomban	Bains-les-Bains, France

B. Total dissolved mineral matter from 1,000 to 5,000 mg. per liter (or from 58 to 292 grains per U. S. gallon).

Franzens (also Classes 2 B and 5 B)	Franzensbad, Czechoslovakia
Fratta	Bertinoro, Italy
Litiosa	San Marco, Italy
Maternidad (also Class 1 B)	Havana, Cuba
Mirtina (also Classes 3 B and 5 B)	Isola, Ischia, Italy
Natalie	Franzensbad, Czechoslovakia
Neu-Quelle (also Class 5 B)	Franzensbad, Czechoslovakia
Rocallaura (also Class 1 B)	Barcelona, Spain
Salina (also Class 3 B)	Belfast, Ireland
Salmiere	Rocamadour, France

C. Total dissolved mineral matter from 5,000 to 10,000 mg. per liter (or from 292 to 584 grains per U. S. gallon).

Carlsbad	Carlsbad, Czechoslovakia
Civillina (Ferro-Arsenicale) (also Class 5 C)	Schio, Italy
Vichy Genereuse	Vichy, France
Vichy Desiree	Vichy, France
San Leopoldo (also Class 2 C)	Bohemia, Czechoslovakia

D. Total dissolved mineral matter from 10,000 to 20,000 mg. per liter (or from 584 to 1,168 grains per U. S. gallon).

Fratta	Bertinoro, Italy
Mühlbrunnen	Bohemia, Czechoslovakia

E. Total dissolved mineral matter over 20,000 mg. per liter (or over 1,168 grains per U. S. gallon).

Apenta (also Class 5 E)	Budapest, Hungary
Aquaperia	Harrogate, England
Birmenstorf	Canton Aargau, Switzerland
Carabana	Carabana, Spain
Condal	Lerida, Spain
Franz Josef	Budapest, Hungary
Friedrichshaller (Bitter Wasser) (also Class 3 E)	Saxe-Meiningen, Germany
Gioconda	Milan, Italy
Glaubersquelle IV	Franzensbad, Czechoslovakia
Hercules	Budapest, Hungary
Hunyadi Janos	Budapest, Hungary
Igmandi	Komorn, Hungary
Karlsquelle (also Class 3 E)	Württemburg, Germany
La Margarita	Courmayer, Italy
Mira (also Class 3 E)	Jaszkarajeno, Hungary
Montecatini Regia (also Class 5 E)	Montecatini (Lucca), Italy
Montmirail	Vaucluse, France
Penegallo (Loeches) (also Class 5 E)	Madrid, Spain
Purgos	Vichy, France
Rubinat (Dr. Llorach)	Lerida, Spain
Saratica	Austerlitz, Germany
Sila	Catanzaro, Italy
Villacabras	Madrid (Province), Spain
Vittoria (also Class 3 E)	Leghorn, Italy

CLASS 5.—*Iron and Chalybeate Waters* (waters in which bicarbonate of iron is a characteristic constituent)

A. Total dissolved mineral matter less than 1,000 mg. per liter (or less than 58 grains per U. S. gallon).

Brambacher (Schiller) (also Class 1 A)	Brambach, Germany
Excelsiorquelle (also Class 1 A)	Bohemia, Czechoslovakia
Harzer Königsbrunnen (also Class 1 A)	Goslar, Germany
Pejo (also Class 1 A)	Trentino, Italy
Porla (also Class 2 A)	Laxa, Sweden

B. Total dissolved mineral matter from 1,000 to 5,000 mg. per liter (or from 58 to 292 grains per U. S. gallon).

Franzens (also Classes 2 B and 4 B)	Franzensbad, Czechoslovakia
Mirtina (also Classes 3 B and 4 B)	Isola, Ishia, Italy
Neu-Quelle (also Class 4 B)	Franzensbad, Czechoslovakia
Orezza (also Class 1 B)	Corsica, France
Rhenser (also Classes 2 B and 3 B)	Rhens, Germany
Rudolfsquelle (also Class 1 B)	Bohemia, Czechoslovakia
Santos (also Class 1 B)	Brzvany u. Loun, Czechoslovakia

Sodener Warmbrunnen II (also Class 1 B)	Taunus, Germany
Stahlquelle Franzensbad (also Class 2 B)	Bohemia, Czechoslovakia
St. Mart (also Classes 2 B and 3 B)	Royat, France
Weinbrunnen (also Class 1 B)	Langenschwalb, Germany

C. Total dissolved mineral matter from 5,000 to 10,000 mg. per liter (or from 292 to 584 grains per U. S. gallon).

Civillina (Ferro Arsenicale) (also Class 4 C)	Schio, Italy
Margit (also Class 2 C)	Czechoslovakia (formerly Szolyva, Austria-Hungary)
Saint Stephans (Woda Stefana) (also Classes 2 C and 3 C)	Dunajec, Poland
Vals Perle No. 3 (also Class 2 C)	Vals-les-Bains, France

D. Total dissolved mineral matter from 10,000 to 20,000 mg. per liter (or from 584 to 1,168 grains per U. S. gallon).

Maxquelle (Arsenwasser) (also Class 3 D)	Dürkheim, Germany

E. Total dissolved mineral matter over 20,000 mg. per liter (or over 1,168 grains per U. S. gallon).

Apenta (also Class 4 E)	Budapest, Hungary
Montecatini Regia (also Class 4 E)	Montecatini (Lucca), Italy
Penagallo (also Class 4 E)	Madrid, Spain

FURUNCLE OF THE NOSE

REPORT OF A CASE RESULTING IN SEPTICEMIA, TREATED SUCCESSFULLY BY INJECTIONS OF MERCUROCHROME *

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Dr. Harris P. Mosher's[1] paper of a year ago on unsolved problems in otolaryngology was stimulating in the extreme and contained many valuable observations. Among the unsolved topics which Dr. Mosher did not mention, there is one which, although seemingly inconsequential, is apt to be followed by such serious complications that it deserves to be included among the rest. I refer to furuncle of the nose. The literature on this common infection is surprisingly meager; indeed, I am acquainted with only one paper on the subject, that by Dr. Lee M. Hurd.[2]

During the past winter, we have had under our care a young girl who, as the result of a nasal furuncle, developed general septicemia.

REPORT OF CASE

M., a girl, aged 15, was admitted to the Post-Graduate Hospital, Oct. 15, 1924, for a swelling on the right side of the face which started as a pimple in the nose on that side. This was incised by the physician, who was called in five days previous to admission. Her condition rapidly became worse, the swelling involving the entire side of the face and the upper and lower eyelids. Intense pain accompanied the swelling. On admission, the temperature was 105 F., pulse 130, and respiration, 30. Examination at that time showed an abscess of the lower lid with a normal fundus oculi. Six days later, October 21, a systolic murmur was detected at the apex; a moderate number of râles were heard throughout the chest, and a friction pleuritic rub was heard over the left side of the chest, posteriorly. Based on this, a diagnosis was made by the consulting internist of "pleurisy and of possible beginning pneumonia. Prognosis, not good." Two days later, October 23, a patch was detected in the left lower lobe.

Immediately on admission, the nose and cheek were explored. Through the opening previously made in the right ala, a small amount of pus was evacuated and a gauze drain inserted. At the time of admission, the blood culture was negative and remained so for nine days. October 27, twelve days after admission, a staphylococcemia was demonstrated: red blood corpuscles, 4,100,000; white blood corpuscles, 14,000; differential, 86 per cent. The fundus continued clear with no signs of meningitis and no exophthalmos. The day after admission, the temperature rose to 106, and in the next two weeks was exceedingly high, never falling below 104 the first week and 103 the second week. Abscesses developed below and above the outside of the orbit, requiring incision and drainage. October 17, 800 c.c. of blood from an immunized donor was given. Two days later, 26 c.c. of a 1 per cent. solution of mercurochrome-220 soluble was administered. This was repeated at intervals of two or three days, altogether four times. The temperature slowly fell until December 6, seven weeks after admission, it was 100 by rectum. During this time, the pulse remained steadily high, never falling below 130 and often reaching 150 and 160.

Three weeks after admission, the left ankle began to pain and swell. Cold applications caused the swelling to subside. Following the first administration of the mercurochrome, there was improvement in the general condition with a negative blood examination each time. A second transfusion of 800 c.c. was given eight days after the first. The patient was discharged from the hospital, convalescent, December 9. One month later, she returned, stating that she was still very weak and recently had been having headaches and nausea. Examination with regard to the temperature, blood and nose was negative, but a pronounced anemia was found. The case was not regarded as a surgical one, and the patient was transferred to the medical ward, where a low order of meningitis was suspected. She left the hospital after two weeks, somewhat improved.

COMMENT

This case is instructive on a number of accounts. First, because of the etiology—an innocent appearing pimple in the nose of a healthy young girl following an incision on the third day gave rise to a swelling which extended to the cheek and eye, accompanied by high fever. There were numerous foci of suppuration with staphylococcus infection of the blood, septic pneumonia and endocarditis, with recovery at the end of two months. Except for the fortunate recovery, the history of the case is not unusual although while cases occur undoubtedly with much frequency, accurate reports are lacking in the literature. The match that sets fire to the conflagration sometimes is the opening of the furuncle by a physician, as in this case. At other times no incision has been made, but the patient has picked off the scab with his dirty fingernail and squeezed out the contents of the furuncle. This was the history in a case of cavernous sinus thrombosis which Dr. Herzig[3] reported recently, and also of a similar case reported by Dr. Heller.[4] Dr. Heller also reported a fatal case of cavernous sinus thrombosis following a furuncle of the right ala nasi in which no incision had been made and treatment consisted only of hot applications.

The usual outcome is the fatal one which occurred in the cases of Dr. Heller and Dr. Herzig. The all important question is the reason for this. Incising furuncles or picking them open under septic conditions elsewhere in the body is not wont to be followed by such alarming consequences. While the infection usually is staphylococcic, it is not invariably so. Cases have been reported in which the organism was a streptococcus. There must be some explanation for this introduction into the system of pathogenic bacteria. The blood drainage of the nose in this area is through the facial vein. This connects, by means of the angular vein, with the ophthalmic veins of which there are two, the superior and the inferior. At the inner angle of the orbit, the superior ophthalmic is wont to anastomose with the inferior ophthalmic, and the common trunk passing through the sphenoidal fissure empties into the cavernous sinus. The peculiar feature of these veins, according to Gerrish, is that they have no valves and that under certain conditions the blood may flow from behind forward. Cavernous sinus thrombosis is the most common complication, although meningitis and septicemia also occur. This disease also occurs following carbuncle of the upper lip. We have, then, a sufficient explanation to account for the infection that takes place. Bacteria always are present in the vestibule of the nose and, introduced traumatically or finding their way spontaneously along the hair follicles, enter the blood stream. The retrograde course of the blood stream in veins without valves is sufficient to do the rest.

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* Read before the Thirty-First Annual Meeting of the American Laryngological, Rhinological and Otological Society, Atlantic City, N. J., May 23, 1925.

[1] Mosher, H. P.: Unsolved Problems in Oto-Laryngology, Tr. Laryngol., *Rhinol. & Otol.* Soc., 1924, p. 354.

[2] Hurd, L. M.: Acute Infections in the Sebaceous Glands and Hair Follicles of the Nasal Vestibule, M. Rec. **101**: 105 (Jan. 21) 1922.

[3] Herzig, A. J.: Personal communication to the author.

[4] Heller, I. M.: Personal communication to the author.

PROGNOSIS

The course of nasal furunculosis when blood infection has taken place in the past has been almost uniformly fatal. Preventive treatment based on one of the anatomic data just given is important. All interference with a boil inside the nose is to be avoided. The use of a dirty needle followed by squeezing is highly reprehensible. Any measure that has favor for boils elsewhere can be employed here. Phenol (carbolic acid) and a strong solution of an ichthyolate preparation are among those finding especial favor. The procedure of Hurd possesses much merit. He uses warm applications inside and outside the nose followed by incision of the furuncle to a very limited extent and the use of suction. When symptoms of invasion of the blood stream show themselves, the method recommended by Bullack[5] is decidedly appealing. Basing his treatment on the anatomy of the part involved, he advises tying the facial vein at a point from 1½ inches to three-fourths inch below the inner canthus of the eye to prevent cavernous sinus thrombosis. He has employed the method in at least one case with most satisfactory results. The statistics that he has collected of complications following carbuncle of the upper lip are startling, twenty-seven cases with six deaths, three of them due to cavernous sinus thrombosis. He recommends, in advanced cases, ligation also of the superior ophthalmic vein. When thrombosis of the sinus actually has occurred, until recently no successful method for its cure had been devised, although based on the surgical relations Mosher among others has developed one through the orbit where the approach is comparatively easy. The result, however, of Eagleton's work,[6] "twenty-two cases with recovery" after cleaning out the thrombus preceded by ligation of the common carotid, is decidedly encouraging.

My own case, fortunately, was not one of thrombosis. It offered problems, however, almost as difficult of solution. The general septicemia and metastases that followed at one time seemed to render the outcome a hopeless one. In the judgment of all who observed the case, the final recovery was due to the use of mercurochrome-220 soluble, 5 mg. per kilogram of the body weight in a 1 per cent. solution, as recommended by Young,[7] who was the first to employ it. His results in septicemia were so encouraging that the solution has been used by a number of observers for desperate blood conditions, with corresponding good results. In all, four injections were given, none of them followed by any untoward results. In spite of the fact that there are cases on record of acute nephritis following its use, any unqualified statement that the cure was due to the mercurochrome cannot be made because of the fact that the patient had two transfusions. Basing my opinion, however, on the remarkable benefit secured in this single case, I would strongly recommend its use under similar circumstances.

104 East Fortieth Street.

PYOCYANEUS MENINGITIS AFTER LUMBAR PUNCTURE

REPORT OF A CASE WITH APPARENT RECOVERY *

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AND
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Meningitis, apart from the epidemic form, is not infrequently caused by the tubercle bacillus, the pneumococcus and the streptococcus. So far as we were able to ascertain, the case presented here is the first reported case of *Bacillus pyocyaneus* meningitis following lumbar puncture, not preceded by or associated with other pyogenic infection and in which the patient apparently made a complete recovery.

We hope that the presentation of this case may reemphasize the necessity of strict aseptic technic in doing lumbar puncture and outline a method that may prove of value in the treatment of pyocyanic meningitis.

REPORT OF CASE

A. K., a white man, aged 32, entered the Hebrew Hospital of Baltimore, Dec. 15, 1924, complaining of severe frontal and crown headaches.

In 1914, the patient had been treated for pulmonary tuberculosis in a state sanatorium. In 1918, he contracted syphilis and gonorrhea. He complained of girdle pains across the upper abdomen in 1922, and in 1923 he noted weakness and shooting pains in the lower extremities and was unable to walk for six months. At this time, the spinal fluid Wassermann reaction was four plus and globulin one plus, although repeated blood Wassermann tests were negative. Following antisyphilitic treatment, Dec. 5, 1924, a spinal puncture was performed. The cerebrospinal fluid obtained was clear and had a normal cell count, and the Wassermann reaction was negative. The following day, December 6, the patient complained of frontal headaches with pain and stiffness of the neck and back. These symptoms increased in severity, and for several days prior to admission the patient found but little relief even after the administration of morphin.

On admission to the hospital, the patient was fairly well nourished, was conscious, and cried out in pain. There was some slurring of speech and a sluggish response to questions. There was marked rigidity, tenderness and limited motion of the neck. There was photophobia, and the pupils reacted sluggishly to light and in accommodation. There was marked diminution of somatic sensory response. Kernig's sign was positive on both sides; Romberg's sign was negative and the gait was not ataxic. There was fibrosis of the apexes of both lungs and some signs of activity. The pulse was 92; the temperature, 104 F.; the respirations, 24; the systolic blood pressure was 108; diastolic, 52. The urine showed a trace of albumin but no casts. A blood examination revealed: leukocytes, 20,500; polymorphonuclear leukocytes, 80 per cent.; lymphocytes, 14 per cent.; large mononuclears, 6 per cent. The blood culture was negative. The blood Wassermann reaction was: water bath, negative; icebox, four plus. On admission, 30 c.c. of a slightly turbid cerebrospinal fluid was removed under considerable pressure. The cell count was 3,550, and the polymorphonuclear leukocytes, 93 per cent. A gram stain showed gram-negative bacilli. A carbolfuchsin stain was negative for tubercle bacilli. The spinal fluid Wassermann reaction was negative. The globulin reaction by Pandy's method was one plus. A culture of the fluid gave a pure growth of *Bacillus pyocyaneus*. The following day, 25 c.c. of spinal fluid was removed under increased pressure. The spinal cell count was 2,480; polymorphonuclear leukocytes, 92 per cent. A culture taken with sterile technic yielded a pure growth of *Bacillus pyocyaneus*, and the spinal fluid on standing thirty-six hours became a brilliant green. During the first few weeks of the patient's illness, lumbar punctures were done every other day and the spinal canal drained almost completely. As the patient improved, the spinal drainage was done less frequently. Jan. 19, 1925, the first of eight interval doses of intravenous neo-arsphenamin was given. February 14, 10 c.c. of inactivated autogenous blood serum was given intraspinally A similar dose of 14 c.c. was given, March 4, and a third dose of 10 c.c. was given, March 7. Each time an equal amount of spinal fluid was withdrawn.

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[5] Bullack, W. C.: Carbuncle of the Upper Lip, Surg., Gynec. & Obst. **14**: 156, 1912.

[6] Eagleton: Oral communication to the author; Infective Cavernous Sinus Thrombophlebitis, to be published.

[7] Young, H. H., and Hill, J. H.: Treatment of Septicemia and Local Infections by Intravenous Injection of [illegible] ile and of Gentian Violet, J. A. M. A. **82**: 669 [illegible]

* From the medical service of the He [illegible]

Spinal Fluid Examinations

Date	Leukocytes	Polymorphynuclears Per Cent.	Mononuclears Per Cent.	Culture
12-15-24	3,500	93	7	B. pyocyaneus
12-17-24	2,480	92	8	B. pyocyaneus
12-19-24	2,750	88	12	B. pyocyaneus
12-21-24	1,450	86	14	B. pyocyaneus
12-23-24	876	78	22	B. pyocyaneus
12-25-24	875	82	18	B. pyocyaneus
12-27-24	140	71	29	B. pyocyaneus
12-29-24	260	60	40	B. pyocyaneus
12-31-24	412	52	48	No growth
1- 2-25	216	44	56	B. pyocyaneus
1- 5-25	100	0	100	No growth
1- 8-25	544	0	100	No growth
1-13-25	74	0	100	No growth
1-15-25	840	0	100	No growth
1-19-25	33	0	100	No growth
1-22-25	48	0	100	No growth
1-26-25	24	0	100	No growth
1-31-25	18	0	100	No growth
2- 7-25	6	0	100	No growth
2-21-25	8	0	100	No growth
2-28-25	12	0	100	No growth
3- 7-25	9	0	100	No growth
3-10-25	56	0	100	No growth
3-24-25	12	0	100	No growth

The early course in the hospital was characterized by hyperexia, leukocytosis, marked loss of weight and headaches relieved temporarily by spinal drainage. The patient remained mentally clear throughout practically the entire course of the disease. March 26, the temperature became normal and remained practically so thereafter. At this time the patient's appetite increased; he gained weight rapidly and complained of no more headaches. The patient was discharged, April 25, apparently cured.

COMMENT

Meningitis caused by *B. pyocyaneus* after lumbar puncture is of extremely rare occurrence. Sonnenschein,[1] in 1923, reported one case of a robust young man who, a few hours after a lumbar puncture which had shown clear fluid, developed symptoms of acute suppurative meningitis, which proved fatal on the eleventh day. The fluid during life and after death showed only *Bacillus pyocyaneus*.

Abadie and LaRoche[2] reported, in 1918, a case of pyocyaneus meningitis in which the disease followed a skull wound. Treatment was by intraspinal injection of the patient's own serum, which apparently cured the young man when the spinal fluid and blood serum contained *Bacillus pyocyaneus*. Three applications of this serum were made, 3 c.c. of the patient's serum being injected at intervals of eighteen and five days.

Chauffard and LaRoche,[3] in 1917, reported a case of tetanus in which intraspinal treatment was given, and the patient developed *B. pyocyaneus* meningitis. The course was relatively benign and cure resulted. There was no pyocyanic septicemia, and the authors considered this case the first of its kind to be reported.

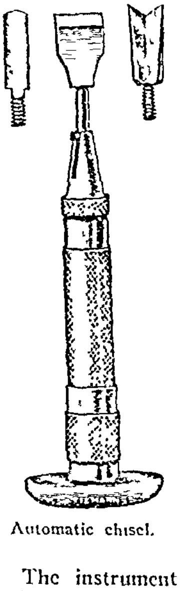
We are not unmindful of the fact that *B. pyocyaneus* is a less virulent organism than others in the pyogenic group, and the favorable outcome of our case may be due in a large measure to the lesser virulence of this infective agent. In this case, the excessive headaches were relieved by the spinal drainage, and we think that this procedure, together with the intraspinal injection of inactivated autogenous blood serum, had a favorable influence on the course of the disease.

Clinical Notes, Suggestions and New Instruments

AN AUTOMATIC CHISEL

David R. Telson, M D , Brooklyn

The chisels shown in the accompanying illustration are constructed on the principles of the steel worker's automatic punch and the dentist's mallet. When pressure is brought to bear on the handle of the instrument, it can be depressed for a short distance, compressing the spring on the inside of the handle. On further pressure the spring is tripped and a short, sharp blow is delivered at the chisel point.



Automatic chisel.

I believe this instrument has particular value in chiseling at the bottom of wounds in which the surgeon desires to keep his examining finger in contact with the chisel head, and finds it awkward to have his assistant use the mallet, yet finds on using the ordinary chisel that it is apt to slip, as it is difficult to gage the exact force that is used when merely pushing the ordinary chisel by hand The instrument can be placed at the site, and merely continued pressure causes it to cut its way through the thickness of the bone. The right angle chisel head is useful in raising bone chips from the lamina of the vertebra in the Hibbs spine fusion. I believe the blow delivered by the spring is much softer and less shock producing than the one that is produced by the mallet, and, therefore, the instrument lessens the objection that is made to the use of the Hibbs spine fusion in Pott's disease by causing less trauma of the diseased area.

The instrument is boilable. However, a drop of sterile olive oil may need to be applied to the inside of the mechanism after several boilings. The force of the blow is regulated by screwing down or releasing the head of the instrument.

734 Ocean Avenue.

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[1] Sonnenschein, C.: Pyocyaneus-Meningitis, Klin. Wchnschr. **2:** 1758 (Sept. 17) 1923.

[2] Abadie, J., and LaRoche, G.: Pyocyaneus Meningitis, Bull. Acad. de méd. **80:** 15 (July) 1918.

[3] Chauffard, A., and LaRoche, G.: A Case of Pyocyaneus Meningitis, Bull. et mém. Soc. méd. d. hôp. de Paris **41:** 646, 1917.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 19, 1925

GOITER PROPHYLAXIS

Less than a decade has passed since systematic measures for the prevention of simple goiter have been instituted on a large scale in this country in regions where the incidence of such thyroid enlargement directs attention to the local possibilities of "disease due to iodin starvation." Iodin preparations of one sort or another have been employed either unwittingly or in a desultory way in the relief of goiter for many years; but it remained for the investigations of Marine and Kimball, beginning about 1917, to furnish a firm foundation for the current prophylactic practices. Thyroid disease is a many headed monster that has often been attacked in the past as if it were a uniform single entity to be overcome. At no time has the importance of accurate differential diagnosis been more urgent than in these days, when not only medical but also lay publications resound the importance of goiter prophylaxis and present volumes of testimony as to the beneficent effectiveness of the attempts already undertaken in this field. As an illustration of the direction followed by the current enthusiasm, the recently advocated conclusions of Hathaway[1] may be cited. He insists that a program that would control the goiter situation should include detailed surveys of all localities where the disorder is suspected; this is the basis for all successful methods of goiter prevention. He recommends the institution of treatment with sodium iodid of the water supplies of all cities and towns that prove to be goitrous; and he adds that small villages not having a common water supply and rural communities must have the iodin supplied by the use of iodized table salt or by iodin tablets of some kind.

There is admittedly much warrant for such recommendations, which have in fact already been put into operation in certain communities under the sanction of competent professional advisers. Medication for the masses and therapy on a wholesome basis—even uniformity of health-promoting recommendations—call for careful consideration. Exercise that is in general admittedly wholesome is by no means always advisable for every member of the family. Cold air is no longer looked on as a universal panacea, even in pneumonia. "One man's meat is another man's poison" is an old saying with modern implications; to this the varied manifestations of allergy bear witness. May it not be well, therefore, for the medical profession to proceed with due caution in the commendable program of goiter prevention, particularly in view of the fact that its advice is likely to be followed with undue enthusiasm by lay followers who are not accustomed to pay attention to exceptions from a wholesale rule? They often forget the importance of adopting recommendations "with a grain of salt"; all too often they pursue the policy which assumes that if a little is good, more ought to be better.

Experienced students of the goiter problem are issuing corrective warnings, but their concern should not be interpreted as dampening the ardor for the possibilities of preventive measures at this time. A highly important movement for health promotion must not be menaced by possible harm from overenthusiasm. Thus Jackson,[2] who writes from Wisconsin with the conviction of an observer within the "goiter belt," asserts, contrary to reports from other sources, that the number of cases of hyperthyroidism has greatly increased as a result of the popular demand for iodin in the treatment of goiter. Consequently, he advises that the element should not be distributed promiscuously either in water or in salt, but should be administered in exact amounts and under a physician's orders. Jackson insists that even minute amounts of iodin are sufficient to initiate symptoms of hyperthyroidism in certain persons with adenomatous goiters. Iodin should be administered, he adds, with particular care to children with adenomatous goiters; it should never be given to adults with this condition.

Likewise Kimball,[3] recognizing that "there is no consistent pathology of goiter," has expressed the message of caution to the readers of THE JOURNAL. His own studies show that toxic goiters may result from the use of iodized salt in cases of adenomas of long standing; he adds, however, that these cases may be entirely coincidental, and that too much emphasis should not be placed on this point. Instead of advocating promiscuous wholesale administration, Kimball urges that in all cases of iodin treatment the dosage should be considered in terms of milligrams. The maximum dosage for an adult, provided there are no contraindications, is 10 mg. daily for not longer than one month, during which time the patients should be under very close observation. Kimball believes that there is no danger in the routine prophylaxis of goiter as it is carried out through the schools; namely, the administration of 10 mg. of iodin weekly.

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[1] Hathaway, J. C.: The Prevention of Simple Goiter, Am. J. M. Sc. **170**: 1 (July) 1925.

[2] Jackson, A. S.: Iodin Hyperthyroidism, Am. J. M. Sc. **170**: 271 (Aug.) 1925.

[3] Kimball, O. P.: Induced Hyperthyroidism, J. A. M. A. **85**: 1709 (Nov. 28) 1925.

The evaluation of the use of iodin in hyperthyroidism belongs in a separate category, as was recently pointed out in The Journal.[4] Within the last two years the use of iodin in the treatment of exophthalmic goiter has attained a new vogue.[5] This is, of course, a procedure quite different from the now familiar prophylactic use of iodin in relation to adolescent goiter. The claims for its application in exophthalmic goiter are that the drug will produce abrupt remission in most cases. The remission is often as rapid and as extensive as that following subtotal thyroidectomy. However, iodin alone as now used has not been shown to be sufficient to suppress the disease permanently. After a patient with exophthalmic goiter has been taking the drug, a rapid rise of metabolic rate and increase of toxic symptoms may occur within one or two weeks if the iodin is stopped. Furthermore, in some cases of exophthalmic goiter, iodin has no observable effect. According to Rienhoff,[6] the artificial remission of the condition, as it is produced by iodin, is associated with a change of the thyroid from a hyperplastic to a colloid state. Obvious variations may occur through a very wide range of coincident clinical and structural possibilities. Such studies greatly enhance the opportunity to approach the problem of choice of therapy with greater intelligence.

MUSCULAR EXERCISE AT HIGH ALTITUDES

This is not the first time that radical revision of the older conceptions of the energetics of muscular contraction—in other words, of the nature of muscular work—has been referred to in The Journal.[7] One of the early steps was the abandonment of the idea that proteins or other nitrogenous compounds supply the energy for muscular performance; for there is no increment of nitrogenous waste such as might be expected from a breakdown of proteins. For a long time the transformation of energy in muscular work was assumed to be due to the oxidation of carbohydrate, presumably glucose, in the muscle. Perhaps the most radical change of opinion regarding the process has been the abandonment of the theory that this organ is a combustion engine, and the acceptance of the view that it is a chemical machine in which the energy of motion is derived directly from chemical energy.

There was a time when the oxidative metabolism was conceived to be somewhat dependent on the oxygen supply, in the same sense that combustion is accelerated by fanning the flame. It has become a dictum of the science of nutrition, however, that "the absorption of oxygen does not cause metabolism, but rather the amount of the metabolism determines the amount of oxygen to be absorbed."[8] In this connection we have heard of late of the possibility of the body's incurring an oxygen deficit under severe exertion. According to the investigations of Hill and Meyerhof, in particular, the process in muscular contraction is anaerobic; that is, it does not primarily involve oxidation. As a recent writer[9] has described the process, the muscle accumulates its energy in a form known as a lactic acid precursor, glycogen, which is easily and quickly made available at the instant of contraction. The energy becomes available by the transformation of glycogen into lactic acid, and this process is immediately followed by a contraction. Afterward, the lactic acid remains to be reconverted into glycogen or oxidized. In the reconversion process approximately one molecule of lactic acid is oxidized to every five reconverted. If, after contraction, enough oxygen is not available for reconverting the acid into the precursor, then the acid remains, so to speak, as a security for future oxidation. In other words, the amount of lactic acid is a measure of the oxygen debt. This point of view makes it easier to understand how it is possible for a man to take an amount of muscular exercise that requires far more oxygen than can be supplied during the exercise. The oxygen is not used in the process of muscular contraction but afterward during the process of recovery. The muscle is capable of going into debt for oxygen. Thus, Henderson and Haggard[10] have recently shown that an oarsman may exert a power which exceeds by 30 to 60 per cent. that afforded by the oxygen simultaneously absorbed; he thus draws heavily on his credit, and incurs oxygen deficits of from 4 to 8 liters or more; these deficits are repaid by the high rate of oxygen absorption for a time after the work is ended.

It might be expected that a deficiency in the available supply of oxygen would cause the oxygen debt, after a selected load of work, to be larger than when the supply is abundant. The oxygen debt, as ordinarily defined, is determined by measuring the total oxygen used in the selected period of recovery and by subtracting from this the amount of oxygen that the body would have used in the same time during rest. Schneider and Clarke, at the School of Aviation

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[4] Evaluation of Present Status of Iodin in Hyperthyroidism, Current Comment, J. A. M. A. **85**: 1732 (Nov. 28) 1925.

[5] Plummer, H. S.: Results of Administering Iodin to Patients Having Exophthalmic Goiter, J. A. M. A. **80**: 1955 (June 30) 1923. Starr, P.; Walcott, H. P.; Segall, H. N., and Means, J. H.: The Effect of Iodin in Exophthalmic Goiter, Arch. Int. Med. **34**: 355 (Sept.) 1924. Plummer, H. S., and Boothby, W. M.: The Value of Iodin in Exophthalmic Goiter, J. Iowa M. Soc. **14**: 66 (Feb.) 1924. Fraser, F. R.: Iodine in Exophthalmic Goiter, Brit. M. J. **1**: 1 (Jan. 3) 1925. Kimball, O. P.: Induced Hyperthyroidism, J. A. M. A. **85**: 1709 (Nov. 28) 1925. Pemberton, J. deJ.: Present-Day Surgical Treatment of Diseases of the Thyroid Gland, J. A. M. A. **85**:1882 (Dec. 12) 1925.

[6] Rienhoff, W. F., Jr.: The Histological Changes Brought About in Cases of Exophthalmic Goiter by the Administration of Iodine, Bull. Johns Hopkins Hosp. **37**: 285 (Nov.) 1925.

[7] When a Muscle Contracts, editorial, J. A. M. A. **84**: 442 (Feb. 7) 1925; The Food and Fuel of Athletes, ibid. **84**: 2004 (June 27) 1925.

[8] Lusk, Graham: Science of Nutrition, Philadelphia, W. B. Saunders Company, 1917, p. 31.

[9] Schneider, E. C., and Clarke, R. W.: Studies on Muscular Exercise Under Low Barometric Pressure, Am. J. Physiol. **74**: 334 (Oct.) 1925.

[10] Henderson, Yandell; and Haggard, H. W.: The Maximum of Human Power and Its Fuel, Am. J. Physiol. **72**: 264 (April) 1925.

Medicine, Mitchel Field, Long Island, have observed that the oxidative processes of the body are retarded at barometric pressures less than 410 mm. The interference of a low barometric pressure with the oxidative processes of the body is accentuated during physical work. The aviation authorities assert that, despite the markedly decreased consumption of oxygen during work at a low barometric pressure corresponding to a very high altitude, it is not shown that the oxygen debt of the body is increased by work at the low pressure. Theoretically, they state, the oxygen debt should be as much larger when work is done under a low pressure as the oxygen consumption at that pressure is less than when the same load is carried at the normal barometric pressure. Such is not the case. In the period of recovery after exercise, the consumption of oxygen is approximately equal after equal loads of work at normal and low barometric pressures. Evidently the body protects itself against an oxygen deficit in the early stages of existence at lowered barometric pressures until various familiar protective devices come into play. The disturbances in the biochemical condition of the body are slowly compensated for, if sufficient time is spent under the new condition to permit the system to reestablish an equilibrium.

SUNSHINE AND HEALTH

There is something appealing in the doctrine of the healthfulness of fresh air and sunshine. It almost seems as though they represent instinctive preferences on the part of mankind so far as modes of living are concerned. These atmospheric factors play a large part in the propaganda of medical climatology, yet it has not been easy to define their potencies in terms of concrete benefits or to describe their functions in the language of scientific endeavor. The demonstration that the sun's rays may destroy certain micro-organisms was welcomed, for it gave the semblance of tangible advantage to sunlight. The antirachitic effects of exposure to sunlight discovered during the last few years indicate the therapeutic and prophylactic efficacy of sunlit air. Hope has been awakened of further advantages to be learned, and warnings have even been issued against the possible harmfulness of overexposure to such types of radiation in the belief that it may be healthful, curative or even injurious, depending on the "dosage."

Among the slowly growing accumulation of measurable facts are data on the interrelation of rickets and rachitic predisposition to climatic factors. This has been stressed before in The Journal.[1] It is not easy to evaluate correctly the relative importance of diet and environment in this connection, especially since the food intake is likely to alter with the seasons and geographic locations, so that what is ascribed to sunshine may in fact be associated with better nutrition depending on dietary changes. Among the recent statistics relating to the composition of the blood—a good index of rachitic tendencies—the data of Riesenfeld, Handelman and Rose[2] are significant. More than a thousand determinations of inorganic phosphorus were made on the blood of mothers and their new-born infants. The investigation extended over a period of fourteen consecutive months, and the data obtained were correlated with the factors causative of rickets. No significant difference was found between the average inorganic phosphorus of the white and negro mothers or of their infants. The inorganic phosphorus of the blood of the new-born infant was not affected by the previous habitat of the mother (that is, tropics or temperate zone). The time the mother spent outdoors during gestation showed no influence on the inorganic phosphorus of the infant's blood. The diet of the mother was one of the controlling factors of the inorganic phosphorus content of the blood of the new-born infants. However, a definite seasonal variation of inorganic phosphorus was noted, which is in harmony with the recognized seasonal incidence of rickets. The curves of available sunlight hours and inorganic phosphorus of the new-born infant are parallel in the latter half of the year, the points of resemblance in the sunlight curve preceding that of the inorganic phosphorus curve by one month.

According to these observers, individual sunlight exposure and the available sunlight in the community were not found to be such obvious causative factors in the inorganic phosphorus of the infant as we are led to expect from the current literature on rickets. On the other hand, these experimenters believe that the relative humidity is strikingly associated with the rise and fall of the average inorganic phosphorus of the infant's blood. In the past, this relation between the humidity and blood phosphorus concentration has not been emphasized. It is suggested that moisture and precipitation may intensify the effect of the ultraviolet rays by increasing their concentration.

In further emphasis of the interrelation of climate and bone development, Moore and Dennis[3] of Portland, Ore., have observed that craniotabes is more prevalent in the Pacific Northwest than in sections of the country having more sunshine. It occurs most frequently during the months of March and April, also being most severe in the spring months. Thus the seasonal incidence of craniotabes in such regions is the same as that of undisputed signs of rickets.

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[1] Hess, A. F.: The Ultraviolet Rays of the Sun, J. A. M. A. 84: 1033 (April 4) 1925. The Antirachitic Vitamin, editorial, ibid. 85: 976 (Sept. 26) 1925.

[2] Riesenfeld, E. A.; Handelman, Isidore; and Rose, A. R.: Inorganic Phosphorus in the Blood of the New-Born, Am. J. Dis. Child. 30: 646 (Nov.) 1925.

[3] Moore, C. U., and Dennis, H. G.: Craniotabes: Its Prevalence and Significance, Am. J. Dis. Child. 30: 683 (Nov.) 1925.

Current Comment

THE BEHAVIOR OF SULPHATES IN THE BODY

The urine contains sulphates in variable amounts ranging, as a rule, from 1 to 2 gm. of sulphur daily. Except under special circumstances these do not arise from preformed sulphates introduced into the organism but are products of its oxidative metabolism. Sulphur is ingested chiefly in the form of protein; the quantities consumed in other compounds are small at most. Between the moment of intake and that of its output this element therefore undergoes, somewhere in the body, chemical reactions resulting in the production of sulphate ions. What happens to them prior to their elimination has been largely a matter of conjecture. With respect to the physiologic migrations of chlorids and phosphates, a considerable mass of information is available; not so in the case of sulphates. A few years ago, Denis [1] of the Tulane University School of Medicine at New Orleans ascertained that sulphates circulate in normal human blood to the extent of from 1 to 0.5 mg. of sulphur per hundred cubic centimeters of blood. She also observed that in nephritic patients there may be a manifold retention of sulphates in the blood. According to Denis and Hobson [2] the sulphate ion occupies a position somewhat similar to that of uric acid as regards ease of excretion by the kidney, whereas the chlorin ion may be compared in this respect to the creatinin fraction; in other words, the sulphate ion appears to be excreted with greater difficulty than does any other inorganic radical ordinarily present in normal blood and, therefore, is retained more frequently and in greater amount than any other inorganic component. The reverse may be said to be true of the chlorin ion, which, on account of its apparent ease of excretion, is seldom retained except in certain cases in which marked impairment of kidney function takes place, whereas the retention of inorganic phosphate may amount to 400 per cent. and of sulphate to as much as 3,000 per cent. of the average normal value. When chlorids are injected into the blood stream, they disappear from it with great rapidity; sulphates, on the other hand, tend to be retained for some time.[3] It is well known that ingested sulphates do not readily penetrate the alimentary barrier; hence they are only slowly absorbed and by their accumulation in the bowel tend to promote laxation. Denis and Leche [4] have now added another chapter to the story of sulphate behavior in the body by the demonstration that the sulphate ions are not readily absorbed by the tissues, even when the blood abounds in them. From this it appears that it is the kidneys alone that exert any noteworthy selective retention of sulphates.

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[1] Denis, W.: Sulfates in Blood, J. Biol. Chem. **49**: 311 (Dec.) 1921.

[2] Denis, W., and Hobson, S.: A Study of the Inorganic Constituents of the Blood Serum in Nephritis, J. Biol. Chem. **55**: 183 (Feb.) 1923.

[3] Barkus, O.: On the Rate of Elimination of Inorganic Salts from the Blood Stream, Am. J. Physiol. **49**: 35 (June) 1924.

[4] Denis, W., and Leche, Stella: On the Distribution of Injected Sulfates in Tissues, J. Biol. Chem. **65**: 565 (Oct.) 1925.

THE PARATHYROIDS AND IODIN

The identification of the parathyroid glands has a sufficiently recent history to excuse some of the confusion that still is current with regard to them. A discriminating anatomic description of these structures was not published until Sandström's work in 1880; thereupon, several years intervened until it was discovered that the parathyroids have a special physiologic significance that is not to be confused with the function of the thyroids. It is not strange, therefore, that when attention was focused on the presence of iodin in the latter glands after the epoch-making research of Baumann in 1895, the parathyroids should have been subjected anew to consideration from the standpoint of this chemical element. Not a little confusion was early occasioned by the fact that iodin was actually reported to be a component of the parathyroids. Presently, conflicting reports appeared. It is quite conceivable that, unless the dissections are carefully carried out, fragments of adherent thyroidal tissue may be included in parathyroid preparations; it is possible, likewise, that iodin may actually be distributed more widely in the body than was at first supposed. The latest evidence secured by Hjort, Gruhzit and Flieger [1] seem to afford an explanation. Histologic examinations have convinced them that there need be no contamination of parathyroid preparations with thyroid tissue at the time of collection from the animal. This is certainly true if the preparations are made from the external bovine glands. Careful chemical analysis on histologically controlled materials has disclosed that the iodin content of the parathyroids is of no greater magnitude than that of the ovaries, pituitary and thymus. The results, indicating from 0.003 to 0.006 per cent. of iodin in the desiccated tissues, were so nearly alike as to warrant the conclusion that only a slight trace of iodin is contained in the glands examined and that the iodin is quite uniformly distributed throughout the animal glandular system, the thyroid excepted. These findings are essentially a corroboration of the majority of past observations; and they suggest that the iodin found in these glands probably represents the normal distribution of that substance throughout the body tissues. Consequently, claims regarding the presence of iodin in commercial parathyroid products should not be allowed to produce any unwarranted implications with respect to therapeutic potencies or properties.

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[1] Hjort, A. M.; Gruhzit, O. M., and Flieger, A. G.: The Parathyroid Glands and Their Iodine Content, J. Lab. & Clin. Med. **10**: 979 (Sept.) 1925.

Essentials for Medical Licensure.—It appears to me that it *is essential for the good of the community that all individuals* licensed to treat the sick members of the community should have received the same basal education, and should have passed through practical courses qualifying them to obtain diplomas or degrees. At the present time the minimum curriculum in this country is a five years' course of study after having passed a preliminary examination in general knowledge, and a preregistration examination in elementary chemistry and elementary physics.—Waring, H. J.: Osteopathy, Chiropractic and Medicine, *Brit. M. J.* **2**:682 (Oct. 17) 1925.

Association News

GRANTS FOR RESEARCH

Committee Requests Information Concerning Needs

The Committee on Scientific Research of the American Medical Association announces that applications for grants should be mailed to this committee as soon as possible. Recommendations will be made, Jan. 30, 1926. Applications giving full details may be forwarded to the chairman of the Committee on Scientific Research, American Medical Association, 535 North Dearborn Street, Chicago.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

Society News.—Dr. Willard J. Stone, Pasadena, addressed the San Diego County Medical Society, December 8, on "Certain Aspects of Heart Disease," and Dr. James W. Sherrill, San Diego, on "The Parathyroids."——Dr. James F. Percy, Los Angeles, recently addressed the Tulare County Medical Society on "The Modern Treatment of Cancer."——Dr. Steele F. Stewart addressed the Los Angeles Medical Association, Los Angeles, December 3, on "Convalescent Care of Infantile Paralysis."

Personal.—Dr. Aleck P. Harrison has been appointed health officer of Santa Barbara County, to succeed Dr. George S. Loveren.——Dr. Matthew F. Desmond has been appointed health officer of Burlingame.——Dr. Jessie B. Farrior has been appointed resident physician at St. Anthony's Hospital, Oakland.——Dr. Buchanan Caldwell, Biggs, has been appointed health officer of Butte County to succeed the late Dr. Lewis Q. Thompson.——Dr. Philip B. Fry, Benicia, has been appointed health officer of Benicia.

Reinstatement Denied.—At the regular meeting of the California State Board of Medical Examiners, October 20, Sacramento, the petition of Dr. Earl Harlan, Colusa, for the restitution of his license, which was revoked, July 7, was denied. Dr. Harlan was accused of irregularities in regard to narcotics. Dr. Toshio Ichioka, Los Angeles, who was found guilty of illegal advertising, was given three years probation in which to practice on condition that he make his advertising conform to standards of the board.

Prizes for Medical Essays.—The council of the California Medical Association, at a meeting at Long Beach, November 8, resolved to establish two prizes of $150 to be competed for at the 1926 annual convention, one for a paper on original research, the other on a clinical subject, the scope of the material to be determined by the committee. Any member of the state association is eligible to compete, and papers must be submitted before March 19, 1926. Inquiries as to the contest should be addressed to the chairman of the committee, Dr. Walter C. Alvarez, 177 Post Street, San Francisco; other members of the committee are Dr. Dudley Fulton, Los Angeles, and Fred Fairchild, Woodland.

CONNECTICUT

Laymen Health Officers Appointed.—Carolyn Hanchett has been appointed health officer of Canaan, replacing Isaac P. Hornbeck.——Mr. Charles B. Eastman has been appointed health officer of Woodbury, replacing Mr. Charles H. Capewell.——Mr. Marshall E. Case has been appointed health officer of Barkhamsted, replacing Mr. Herbert Case, resigned.

Health Officers Appointed.—Dr. Samuel Bartholomew has been appointed health officer of Goshen, to succeed the late Dr. Caroline North Stevens.——Dr. Lester F. Turney has been appointed health officer of Windsor, to succeed the late Dr. Howard F. King.——Dr. Voyle A. Paul is now acting health officer of Stamford until an appointee is named to succeed Dr. Raymond D. Fear.

Yale to Revise Educational Methods.—The faculty of Yale University School of Medicine, New Haven, is considering the abolition of the year system of study and the division of the student body into classes. Dean Winternitz announced, December 16, that plans are being made to revise thoroughly the educational methods with a view to placing less emphasis on routine class work and more on independent thought and research. The program will involve abolishing the system of examinations at the end of courses. The student will select the sequence of his studies in the first two years of the curriculum, and after qualifying for clinical subjects will again be allowed the liberty of choice. The completion of these studies and their arrangement will be largely a matter of his choice and ability, and his admission to courses will depend on his fitness as determined by the instructor in charge. As a check on the accomplishment of students, there will be group examinations and a graduating thesis, and within reasonable limits the student will determine when he will present himself for such a test.

DISTRICT OF COLUMBIA

Adcox Pleads Guilty in Washington.—Dr. Robert Adcox and Sam Kaplan, St. Louis, pleaded guilty, December 7, in Washington, it is reported, to an indictment charging them with conspiracy to use the mails to defraud; Dr. Ralph A. Voigt, Kansas City, Mo., and "Bishop" Helmuth P. Holler, dean of Oriental University, were indicted with this pair in March, 1924. The government charged, it is said, that they represented Oriental University as a bona fide institution and issued medical diplomas. The catalogue of this school is said to show that about 700 various degrees were issued. "Bishop" Holler's former secretary testified that the "faculty" met once a month to sign diplomas, and that each member received 25 cents per signature. A medical degree is said to have cost $100, and could be obtained in six and sometimes in three months; a degree in dental surgery cost $75 and doctor of divinity, $55. Some of these diplomas exhibited at the trial had government seals, said to have been obtained from certificates issued by the Attorney General's office which indicated that certain persons were notary publics. An alumni association and endowment fund had been started with President Obregon of Mexico heading the endowment fund committee, other members being in Brazil, Japan, Switzerland and other places.

FLORIDA

Increase in Death Rate.—The Department of Commerce announces that the 1924 death rate for Florida was 1,484 per 100,000 population as compared with 1,349 in 1923. The increase is largely accounted for by increases in the death rates from heart disease, pneumonia, automobile accidents and cancer.

The Florida Migration.—About 700 physicians took the June and October examinations to obtain licenses to practice medicine in Florida, according to a statement in the New York *Times*, credited to the Florida state health officer. While the number of physicians is considered sufficient (there were 1,452, Jan. 1, 1925) to protect the public health, the number of tourists living in camps, estimated by the state health officer at 125,000 and by others at as much as 600,000, demands careful consideration. There are 178 certified tourists' camps and an unknown number of small camps. The inspection of these camps is in the hands of a field staff of seven, the legislature having failed to provide funds for more inspectors. There are physicians as full time health officers at Miami, Jacksonville, Tampa, Coral Gables, Lakeland, Fort Pierce, and Hollywood, while West Palm Beach has a layman as health officer, and St. Petersburg and Fort Lauderdale have health officers who are veterinarians. The city of Miami, the most congested place in the state, has twenty-six sanitary inspectors. The general problem of sanitation was taken up December 10-11, at a two-day conference of the League of Florida Municipalities at Orlando, attended by representatives or the mayors of all cities in the state. Local physicians in places having no full-time health officers are devoting part time to municipal health problems. The state health officer, Dr. Burdett L. Arms, stated that every step to guard against epidemics is being taken.

ILLINOIS

Medical Board Objects to Free Immunization.—The medical board of St. Anthony's Hospital, Rock Island, has passed a resolution, according to the Rock Island *Times*, opposing the administration of toxin-antitoxin free of charge to school children under the direction of school physicians; as a result, it is said, the plans of the school superintendent to have pupils immunized against diphtheria have been changed, and family physicians will do the work when requested by parents. The toxin-antitoxin which had been ordered from the state health department will be turned over for this purpose without charge.

Chicago

Society News.—There was a joint meeting of the Chicago Medical Society and the Chicago Roentgen Society, December 16, at which Dr. James H. Hutton exhibited a case of hemochromatosis in a woman, and Dr. Mary E. Hanks read a paper on "Roentgen Ray as a Remedy in Fibroid and Other Benign Gynecologic Diseases."——At the tenth annual meeting of the board of governors of the Institute of Medicine of Chicago, December 9, Dr. Anton J. Carlson, professor and chairman of the department of physiology, University of Chicago, was elected president of the Institute for 1926; Dr. Robert B. Preble, vice president; Dr. George H. Coleman, secretary; Dr. John Favill, treasurer, and Dr. Ludvig Hektoen, chairman of the board.——Dr. William E. Gallie, Toronto, will address the Orthopedic Club, December 22, at the University Club on "Transplantation of Fibrous Tissue in Repair of Anatomic Defects." Dr. Joseph C. Bloodgood, Baltimore, will address the club, January 8, on "A Brief Review of the Salient Points in the Diagnosis and Treatment of Benign and Malignant Lesions of Bone from an Industrial Standpoint."——There was a dinner at the Hamilton Club, December 16, in honor of Dr. Amedee Granger, New Orleans, and Dr. Russell L. Hayden, Kansas City, Mo., who addressed the Chicago Medical Society that evening on "Radiographic Examination of the Mastoids" and "The Value of the Dental Radiograph in Determining Periapical Infection," respectively.

MAINE

Society News.—Dr. John L. Morse, Boston, held a clinic recently before the semiannual meeting of the Aroostook County Medical Society at Fort Fairfield, and in the afternoon addressed the society on "Physical Examination of Children."——Dr. Foster S. Kellogg, Boston, recently addressed the Androscoggin County Medical Society, Lewiston, on "Obstetrics."——Dr. Alfred Mitchell, Jr., Portland, recently addressed the Kennebec County Medical Society, Waterville, on "A Review of Urology."

MARYLAND

Society Election.—Dr. George L. Streeter, chief of the department of embryology of the Carnegie Institute, Washington, D. C., gave an illustrated lecture before the Baltimore City Medical Society, December 4, on "The Miller Specimen, the Youngest Known Human Embryo." Dr. Dean Lewis, Johns Hopkins University Medical School, gave an illustrated lecture on "Surgical Diseases of the Large Bowel"; Dr. Isador C. Rubin, New York, spoke on "Diagnostic and Therapeutic Application of Peruterine Insufflation in Cases of Sterility." At this meeting Dr. William T. Watson was elected president of the society; Dr. E. H. Robertson, vice president; Dr. Edward P. Smith, secretary, and Dr. Charles E. Brack, treasurer.

Infant Mortality Declines; Birth Rate Rises.—A report by Dr. James H. Mason Knox, Jr., chief of the Bureau of Child Hygiene, state department of health, shows a steady decline in infant mortality in Maryland and an increase in the birth rate. Of every five babies born in 1910, one died before reaching 1 year of age, while last year the ratio was one death to every twelve births. Deaths of children under 1 year of age have decreased about 25 per cent. last year as compared with 1910. For the same years, the increase in births is about 60 per cent. In 1910, the first year for which figures were kept by the state deparement of health, 2,169 infant deaths were recorded; last year the total was 1,509. Births in 1910 numbered 10,710, as compared with 17,248 last year.

MASSACHUSETTS

Fellowship in Medicine.—The will of M. Douglas Flattery, Boston, who died November 25, provides for a bequest of $25,000 to Harvard University, which will be held in trust for the M. Douglas Flattery Fellowship and a research fellowship in medicine.

Society News.—Dr. Raphael Isaacs, Huntington, addressed the North Shore Medical Fraternity, November 3, on "Diseases of the Blood and Blood-Making Organs," illustrated with lantern slides.——Dr. Albert Warren Stearns, Boston, psychiatrist to Charlestown State Prison, addressed the Worcester District Medical Society, November 11, on "Conduct Disorders as a Public Health Problem."

Personal.—Dr. Abraham Myerson, professor of neurology and neuropathology, Tufts Medical School, Boston, addressed a meeting at the Chamber of Commerce, November 18, held under the auspices of various industrial societies, on "The Practical Psychology of Business," and Dr. Charles Macfie Campbell, director of the Boston Psychopathic Hospital on "The Mental Health of the Individual Worker."

MICHIGAN

Dr. Darling Honored.—Dr. Cyrenus G. Darling, Ann Arbor, was the guest of honor at a dinner at St. Joseph's Mercy Hospital, tendered by the hospital and staff, on the occasion of his forty-fourth year in the practice of medicine; among the speakers were Harley A. Haynes, director of the University Hospital; Walter H. Sawyer, regent of the University, and Rev. Michael P. Bourke, Detroit. Dr. Darling was presented with forty-four American Beauty roses.

"Minimum Program" for County Societies.—The *Journal of the Michigan State Medical Society* for December publishes the "Minimum Program for County Societies," which the council recently approved and which many county societies have adopted (The Journal, October 17, p. 1230; November 14, p. 1565). The program calls for ten meetings a year, at three of which local speakers will appear with definite planned discussions; each society shall have a "scientific team" of two or three members who will prepare and give a program on request before at least three other societies. The society shall institute a program of physical examinations in which all members shall agree to have a complete physical examination themselves and to secure at least five patients who will be examined. Each society shall have at least one public health lecture group which will give at least five lectures in communities outside their resident communities; each society will assist other organizations so that public lectures may be held one in each high school, one for each parent teacher association, one for each luncheon club, one for each woman's club and one for each association of commerce. There will be at least three dinner meetings at which the speakers will not be medical men, and at least one picnic and one social evening in cooperation with members of closely related organizations. Each meeting of the society shall be reported to the local newspapers in such form that at least one point of value is clear to the reader, and the secretary will report monthly complete records of activities to the state medical society.

MINNESOTA

Personal.—Dr. Audley V. Fankboner, Motley, has accepted the position of superintendent of the Lenont Aurora Hospital, Aurora.——Dr. Alexander J. McRae, Duluth, has resigned as superintendent of St. Luke's Hospital, which position he held for twenty-five years.

Award to Dr. Rosenow.—The Ohio State Dental Society, at the sixtieth annual convention, Columbus, December 2, awarded the Callahan gold medal for 1925 to Dr. Edward C. Rosenow, Mayo Clinic, Rochester, for "outstanding contributions to medical, bacteriologic and dental education."

Society News.—The Hennepin County Medical Society and the Ramsey County Society held a joint meeting, December 7, at the Town and Country Club, Minneapolis, and were addressed by Dr. Arnold Schwyzer on "Surgical Experiences in the Pharyngolaryngeal Area," and by Dr. Frederick H. K. Schaaf on "The Present Status of Stimulation (So-Called Foreign Protein) Therapy." Dr. Orianna McDaniel gave "A Brief Review of Poliomyelitis in Minnesota" before the society, December 9.

MISSOURI

Memorial to Dr. Hypes.—The building committee of the St. Louis Medical Society received a check, November 12, for $7,500 for a memorial for the late Dr. Benjamin M. Hypes, an ex-president, which will be applied as requested, to the "President's Room" in the library.

Society News.—Dr. Frank J. Hall addressed the Jasper County Medical Society, Joplin, November 17, on "Relation of Tissue Diagnosis to Hospital Service," and Dr. Ralph E. Duncan, on "Relation of Laboratory Medicine to General Medicine."——Dr. John L. Yates, Milwaukee, addressed the St. Louis Medical Society, November 24, on "The Biology and Treatment of Cancer."——Dr. Amand N. Ravold was recently elected president of the St. Louis Medical Society; Drs. Charles A. Vosburgh and Floyd Stewart, vice presidents, and Dr. Edwin C. Funsch, secretary.——The Jackson County Medical Society will conduct a symposium, December 15, on "Obstruction of Urinary Bladder Neck" and a symposium, December 22, on "Pernicious Anemia." Prof. Carl F. Nelson, University of Kansas School of Medicine, addressed the society, December 8, on "Cancer—Its Biochemistry."——Dr. Austin B. Jones, Kansas City, addressed the Clay County Medical Society, Excelsior Springs, recently, on "Treatment of Lobar Pneumonia."

The Adcox Confession (Continued).—Branch agencies of the diploma mill having been organized in several cities, Adcox did not have to travel from coast to coast any longer. He had time to develop a new field. He had known for a long time, he says in the St. Louis *Star,* that "big money" could be made in obtaining licenses for "dumb-bells" to practice medicine. Now, after a "thorough investigation," he sent for the "young chap" who offered $1,000 for a license to practice in a Southern state. The offer was repeated and Adcox was assured that the applicant had brains enough to keep out of trouble. Agreeing to take the examination for him, Adcox mailed an application to the board, using the name and address of his client. When the notice to appear was received, he left for the "scene of the big adventure," wondering whether his first attempt in the license market would fail. He finished the "really difficult examination" in two days, and in about a week the "young chap" came to his house with the license and within another week he had rented an office and begun to practice. Adcox says that in a few days he received a dozen requests for licenses. He conferred with Ralph A. Voigt and others, and "one of the men" in his organization promptly "opened up Arkansas." Scores of men ignorant of medicine for the most part—at times enough to warrant the railway to use a special car—made the trip to Little Rock. The names of those who were licensed, he says, can be found in the records. Florida was next to be "opened up." Any one who had a bogus diploma and $500 could get a license there. The examination questions, it is said, were always the same. They were about like these: 1. Are you a doctor? 2. Got a diploma? 3. Do you want to practice medicine in Florida? 4. Can you keep your mouth shut? 5. Did you bring your $500?

When Adcox was taking an examination in the name of another man, a member of the board of examiners tapped him on the shoulder and said, "Come to my office when you finish." The examiner advised Adcox that the next time he came he bring his young men with him and drop into his office the day before the examination. He was told there would be an envelop on the mantel piece in which "you might leave a little something in return for what you find." This meant that Adcox need not handle his applicants one at a time any longer, but that he could bring several, or enough to require a special car. Returning to St. Louis, he looked over the list of men seeking assistance and selected five of the "brightest"; he employed a young doctor who could answer almost any question to help in case of need, and the seven left for the city in the South. Adcox called on the friendly examiner and found a large envelop on the mantel in which was a list of the questions. He took the questions, placed a number of twenty dollar bills in the envelop, and put it back on the mantel. He and the "bright young doctor" then prepared answers to the questions and gave the five applicants each a "pony," which could be concealed in the palm. All five passed and were licensed; some remained in this Southern state to practice, and others after a time went elsewhere with licenses obtained by reciprocity. This board met four times a year; Adcox could not hope, therefore, to obtain enough licenses from this source for all who applied to him, so he took examinations in other states in the names of men of about his age, while Ralph A. Voigt took care of the young fellows in Kansas City. They had on their list several "bright young doctors" who for $500 and expenses would go to any state to take an examination under the name of one of their "clients." Voigt was kept busy taking examinations in Iowa, Illinois, Kansas, Texas, Tennessee, Missouri and other states; he, Adcox says, has taken as many as five prospects into an examination and supplied all of them with answers; when a board required applicants to file their photographs, Voigt would attach a trick photograph of himself to an application which was made out in the name of his client. The photograph would fade in six weeks, leaving a piece of blank paper. Adcox's graft in the Southern state had lasted about a year when his friend on the board of examiners died. Looking about for a new field, he learned that Connecticut had "been opened up."

NEBRASKA

Personal.—Dr. Ethel M. Laybourne has been elected superintendent of the Bryan Memorial Hospital, Lincoln; Dr. Laybourne has been a missionary in India for nine years.

Society News.—Dr. Palmer Findley, Omaha, formerly president of the state medical association, gave a lantern slide lecture on "Puerperal Infection" before the annual meeting of the Eighth Councilor District and Holt County medical societies, O'Neill, October 22. The present officers of the society, Dr. Charles H. Root, Bassett, and Dr. Frederic L. Wilson, Stuart, were unanimously reelected president and secretary-treasurer, respectively.——Dr. James V. Beghtol, Hastings, has been elected president of the Republican Valley and Tenth Council or District medical societies, to succeed Dr. Ralph D. Green, Beaver City.——Dr. Harry Gideon Wells, professor of pathology, University of Chicago, addressed the Lancaster County Medical Society, Lincoln, November 21, on "Heredity in the Relation of Cancer to the Human Species."——Dr. Adolph Sachs was elected president of the Omaha Douglas County Medical Society at the annual meeting, December 8; Dr. Frank M. Conlin, vice president, and Dr. Earl C. Sage, secretary-treasurer.

NEW YORK

Osler Club at Saranac Lake.—The Osler Club, formed at Saranac Lake, held its inaugural meeting, December 9. The purposes of the club include the fostering of good fellowship, stimulation of the study of medical history and the growth of medical libraries; an artistic souvenir program was embellished with selections from the works of Osler.

Veteran Physicians Honored.—The Suffolk County Medical Society, Riverhead, gave a banquet, December 11, in honor of Dr. Clarence C. Miles of Greenport and Dr. Edwin H. Moore of Bay Shore, each of whom has completed a half century in the practice of medicine. The honored guests are still active; Dr. Miles has been recently elected president of the Southold Savings Bank, and Dr. Moore has for many years been coroner of the county.

Society News.—Dr. James S. Ames, Babylon, was elected president of the Suffolk County Medical Society at the October meeting, Riverhead, and Dr. Edwin P. Kolb, Holtsville, secretary. Dr. William St. Lawrence, New York, addressed the society on the use of toxin antitoxin. Dr. Joseph S. Lawrence, executive officer of the state medical society, gave an address. The lectures on psychiatry, approved by the society at the annual meeting, October 29, began December 3 and will continue on Thursdays for nine weeks.——Dr. Smith E. Jelliffe, New York, addressed the annual joint meeting of the Newburgh and Poughkeepsie medical societies at Newburgh, November 17, on "Psychanalysis and Organic Disease."——The New York Society of Orthodontists met at the Vanderbilt Hotel, New York, December 9; the afternoon was devoted to photography, which was discussed, among others, by L. A. Jones, head of the physics department, research laboratory, Eastman Kodak Company, Rochester; the evening session was addressed by Thaddeus P. Hyatt on "Prophylactic Odontotomy as Related to Orthodontia." The next meeting will be in March, 1926, when various committees of the First International Orthodontic Congress will give reports. Charles A. Spahn, D.D.S., 121 East Sixtieth Street, New York, is secretary.

New York City

Personal.—Dr. Hideyo Noguchi received the degree of Doctor, Honoris Causa, November 28, at the Sorbonne, Paris. ——Dr. Charles F. Nichols has been commissioned a major in the U. S. Army Reserve to command the sanitary detachment of the One Hundred and Sixth Infantry.——Dr. Oliver R. Avison, who has been on active duty in Seoul, Korea, since 1893, and is president of the Severence Union Medical College, is at present in New York. Dr. Avison, according to the *New York Medical Week,* spent years in organizing a medical language in Korean and has translated Gray's Anatomy into that language.

Hospital News.—A group of physicians has purchased a site on the west side of East End Avenue between Eighty-Seventh and Eighty-Eighth streets, on which they will build a fifteen-story hospital-hotel.——The board of directors of the New York Post-Graduate Medical School and Hospital held a reception, November 24, to mark the formal opening of the new library.——Sir William Arbuthnot Lane, London, attended the breaking of ground for the clinics building at the new Columbia-Presbyterian Medical Center, November 25. ——The Knickerbocker Hospital has been permitted to mortgage its property for $50,000, which is to be applied on the construction of the new hospital at One Hundred and Thirtieth Street and Convent Avenue.

Proposed Merger of Hospitals.—The New York Academy of Medicine is sponsoring a proposed law to consolidate under one department the control and management of the public hospitals of the city exclusive of those which care for contagious and infectious disease. The bill would place under the hospital advisory board, which is composed of physicians, the scientific management of these hospitals, and would place the business administration, as well as the determination of which patients are able to pay for their care, in the hands of a layman. The purpose of the bill is to relieve physicians of work with which they are not familiar and to give these hospitals the best medical management. The plan has been approved by the mayor and was taken up before the board of estimate branch of the assembly, December 11.

NORTH CAROLINA

Personal.—Dr. William T. Shaver, Badin, has been appointed company surgeon for the Southern Railway, to succeed the late Dr. Jasper N. Anderson, and Dr. George D. Vick, Selma, has been appointed assistant surgeon.

Increase in Death Rate.—The Department of Commerce announces that the 1924 death rate for North Carolina was 1,221 per hundred thousand of population, as compared with 1,197 in 1923. The increase is largely accounted for by increases in the death rates of diseases of the heart (from 112 to 127), pneumonia and nephritis.

OHIO

Gynecologist Appointed.—The board of trustees of the University of Cincinnati, December 1, appointed Dr. Charles L. Bonifield as director of the gynecologic service in the medical school, to succeed the late Dr. Sigmar Stark, and Dr. Henry L. Woodward, acting director of the obstetric service; these were the only new appointments among the directors of services in the medical school; Dr. Carl Koch was appointed an assistant in pediatrics, and Dr. Henry Gruener assistant clinician in otolaryngology, outpatient dispensary. The Mendenhall Scholarship in Obstetrics for 1925-1926 was awarded to Dr. Robert L. Crudgington, resident in the obstetric service at the General Hospital.

Licenses Revoked or Suspended.—The Ohio State Medical Board has taken the action indicated in the cases of the following physicians during 1925:

Charles S. Emery, license revoked, April 6, 1925; reason, conviction of a felony, criminal abortion.

Cassius Minser, license revoked, July 14, 1925; reason, conviction of a felony, criminal abortion.

Addison D. Hobart, license revoked, July 14, 1925; reason, violation of the Food and Drugs Act.

Samuel S. Tomlinson, license revoked, Oct. 6, 1925; reason, conviction of a felony, criminal abortion.

Lloyd E. Overhulse, certificate suspended, April 7, 1925, for sixty days; reason, lending one's name to an illegal practitioner.

Orlo L. Mapes, certificate suspended, Oct. 6, 1925, for sixty days; reason, extravagantly worded advertising.

Charles A. Duff, certificate suspended, Oct. 6, 1925, for sixty days; reason, extravagantly worded advertising, and association with an unlicensed practitioner.

Milk Council Organized.—Dr. John E. Monger, director, state health department, has been appointed chairman of the Ohio Better Milk Council, on whose board of directors are representatives of the state medical association, Ohio Hospital Association, State Association of Graduate Nurses, Ohio Farm Bureau Federation, Ohio State Grange, Ohio Federation of Women's Clubs, Ohio Milk Distributors Association, the College of Agriculture of Ohio State University, the state department of agriculture, and the state department of public instruction. Among the objects of the council are to legally define pasteurization and to punish those who do not comply with the standard established; to determine the conditions surrounding the production and distribution of milk and to have adopted in places where not already adopted the regulations recommended by the state department of health concerning milk, and to recommend that special care be taken in the sterilization of all milk utensils by live steam.

Society News.—Drs. Hugh Cabot, Ann Arbor, Mich., Thomas McCrae, Philadelphia, Charles A. Elliot, Chicago, John F. Barnhill, Indianapolis, Abraham Zingher, New York, and Albert G. Mitchell and Martin H. Fischer, Cincinnati, addressed the Second Councilor District Society at the recent five-day session at Dayton. There was an average daily attendance of nearly 300 physicians from the district; Dr. William B. Quinn, Springfield, was elected president of the society, to succeed Dr. William H. Finley, Xenia; Dr. Arthur O. Peters, Dayton, was reelected secretary, and Dr. Herbert C. Haning, Dayton, reelected treasurer.——Dr. Roy G. Hoskins, professor and head of the department of physiology, Ohio State University College of Medicine, Columbus, addressed the Four-County Medical Society (Fulton, Williams, Defiance and Henry counties) at Wauseon on "Endocrinology and the Physician."——Dr. John M. Ingersoll, Cleveland, addressed the two hundred and third session of the Union Medical Association of the Sixth Councilor District at the College of Worcester, November 10, on "Infections in Nose, Throat and Ear, with a Few Practical Suggestions."

PENNSYLVANIA

Personal.—Dr. John D. Matz, Allentown, was elected president of the Alumni of the Medico-Chirurgical College, at the annual banquet in Philadelphia, November 19.——Dr. John M. Bertolet, Reading, having reached the retiring age, has resigned as a member of the general staff of the Reading Hospital.

Society News.—The fifth annual conference and exposition of hospital supplies and equipment will be held at the Hotel Schenley, Pittsburgh, April 13-15.——Dr. Arthur J. Davidson, associate professor of orthopedic surgery, Jefferson Medical College, addressed the December meeting of the Berks County Medical Society on "The Practical Consideration of the Diagnosis and Management of Joint Tuberculosis."——Dr. Charles H. Miner, state health commissioner, addressed the Lancaster County Health Association, December 16, at Lancaster, on "The Relation of the State Department of Health to the Local Boards of Health."——Dr. Richard J. Behan, Pittsburgh, addressed the Buffalo Academy of Medicine, November 25, on "Correlation of Experimental Research with Treatment in Cancer."

Philadelphia

Society News.—Among others, Dr. Myer Solis-Cohen addressed the Philadelphia Pediatric Society, December 8, on "Removing Bacterial Sites of Infection in the Treatment and Prevention of Endocarditis."

Medical Missionary Society.—The Pennsylvania Medical Missionary Society met, December 2, at the home of Mrs. Charles E. Pugh; about 150 members and guests of the society were present. Dr. Wilfred T. Grenfell gave an address on medical missionary work in Labrador.

Gifts of Hospital Beds.—George W. Nevil has given $5,000 to the National Stomach Hospital, Philadelphia, to endow a free bed in memory of the family of Joseph and Amelia Nevil. Our correspondent writes that Mr. Nevil has given fifteen other similar gifts creating free beds in other hospitals in Philadelphia.

First Pyorrhea Clinic.—With donations from several Philadelphians, a clinic has been established at 2009 Pine Street for the treatment of pyorrhea. It is said to be the first of its kind in this country and will be open to the public from 2 to 5 on Monday and Thursday. A nominal fee will be charged those able to pay.

TENNESSEE

Society News.—Dr. M. B. Hendrix, Memphis, was elected president of the Frisco Railroad Medical Association at a recent meeting in St. Louis.——The Memphis and Shelby County Medical Society voted recently to take no action on the offer of the American Birth Control League to send a lecturer to discuss contraception.

VIRGINIA

Personal.—Dr. Robert P. Cooke has been appointed county health officer of Accomack County. Dr. Richard R. Nevitte, Temperanceville, was elected president of the Accomack County Medical Society at the recent annual meeting.

Chiropractor Sentenced.—Rena M. King, a chiropractor of Richmond, was sentenced, November 21, to sixty days in jail by Justice Ingram on a charge of practicing without a license. On a previous occasion, Justice Ingram fined the defendant $50 and required a peace bond of $1,000 for twelve months. The case was appealed.

Funds for New Medical School.—President Alderman of the University of Virginia announced, December 9, that the General Education Board had appropriated $700,000 to the university for the erection of buildings and equipment for medical science and for properly relating the medical science to the hospital and clinical work already established. The gift is said to be without any further restrictions.

WEST VIRGINIA

Community Cooperation.—The twenty-four bed tuberculosis sanatorium, Eastmont, in Monongalia County, is nearing completion under the auspices of the County Tuberculosis Association. A site having been chosen on the Cheat River road, 3 miles east of Morgantown, the association held conferences with various organizations to obtain their cooperation, and when plans were complete, members of social and civic clubs cleared several acres of grounds; the bricklayers donated their services to lay the foundation; lumber and electrical companies donated materials; the lathers and the plasterers donated their services and some materials; the traction company extended their line to the sanatorium; organizations and individuals contributed several thousand dollars, and the Monongalia County Court appropriated $7,000 for maintenance. The sanatorium, now almost completed, has actually been erected by the community.

CANADA

Personal.—Dr. Alfred Desloges, formerly intern at the Hotel Dieu Hospital, Montreal, has been appointed a fellow in ophthalmology at the Mayo Clinic, Rochester, Minn.——Dr. Reginald S. Henderson of the Tranquille Sanitarium, Vancouver, who has been appointed medical officer for the Engineer Gold Mine, left, November 15, to take up his new duties.——Dr. William Egbert, Calgary, was sworn in as lieutenant-governor of Alberta, October 29, to succeed Dr. Robert G. Brett. Dr. Egbert formerly was president of the Provincial Medical Association and of the Calgary Medical Association.

Dissolution of Canadian Branches.—The council of the British Medical Association has given notice to all concerned of the following resolution passed by the council, October 21. The Canadian branches referred to will be deemed by the council to be dissolved as from June 1, 1926:

> That, following on the adoption by the annual representative meeting, 1925, and extraordinary general meetings of the association, of articles of association as regards affiliation, and the terms of the affiliation of the Canadian Medical Association with the British Medical Association, the council, in pursuance of the power conferred on it by Article 15, do forthwith give notice to dissolve the following branches of the British Medical Association in Canada: Halifax, Nova Scotia; Montreal; St. John, New Brunswick; Saskatchewan; Toronto.

GENERAL

Society News.—Dr. Weston D. Bayley, Philadelphia, was elected president of the American Stomatological Association at the meeting in New York, November 16; Dr. George R. Satterlee, New York, president-elect; Drs. Joseph C. Bloodgood, Baltimore, and Oliver T. Osborne, New Haven, Conn., vice presidents; Dr. Robert H. Rose, New York, treasurer, and Alfred J. Asgis, D.D.S., New York, secretary.——The next annual meeting of the American Gynecological Society will be at Stockbridge, Mass., May 20-22, 1926.

Fellowships for Women.—The American Association of University Women announces fellowships which are open to American women, among which are the Sarah Berliner Research and Lecture Fellowship for women holding the degree of Ph.D., or D.Sc. The value of the fellowship is from $1,000 to $1,200, available for research in biology, chemistry or physics. The association also announces that the Alpha Xi Delta fraternity offers a fellowship of $1,000 for graduate work in the field of medicine or mental science available for the year 1926-1927; it will be awarded by the committee on fellowships of the American Association of University Women. The association offers a $1,200 fellowship to carry on research in some country other than the fellow's own during the academic year 1926-1927. The stipend will be paid half-yearly in advance, and the work can be done in any important university or institution. Applications should be made to the chairman on fellowships, Prof. Agnes L. Rogers, Bryn Mawr College, Bryn Mawr, Pa.

New County Society Presidents.—The following have recently been elected president of the county medical society indicated: Dr. Nelson M. Rhodes, Champaign County Medical Society, Urbana, Ohio; Dr. Lee E. Shafer, Scott County Medical Society, Davenport, Iowa; Dr. Reuben A. Moffett, Knox County Medical Society, Knoxville, Ill.; Dr. Clarence A. Good, Buchanan County Medical Society, St. Joseph, Mo.; Dr. John F. Dunn, Arlington, Ky., Carlisle County Medical Society; Dr. James A. Elliott, Battle Creek, Mich., Calhoun County Medical Society; Dr. Harry A. Neiswander, Pandora, Ohio, of the Putnam County Medical Society, and Dr. Willet W. Binion, Benevolence, Ga., of the Randolph County Medical Society; Dr. Frank A. Fuller, Jacksonville, Texas, the Cherokee County Medical Society; Dr. Francis M. Hartsook, the Vermilion County Medical Society, Danville, Ill.; Dr. Melville F. Boulden, the Clinton County Medical Society, Frankfort, Ind.; Dr. Herman C. Grim, Trumbauersville, Bucks County Medical Society, Pennsylvania; Dr. David Ward Scanlan, Atlantic City, N. J., Atlantic County Medical Society (reelected).

News of Epidemics.—The epidemic of measles in Yonkers, N. Y., December 1, had amounted to 800 cases with five deaths in children under 3 years of age; there were 300 cases in the city on that date.——The health officer of Norristown, Pa., reported a measles epidemic in November of forty-nine cases.——The city health department of Dallas, Texas, reported the closing of the kindergarten in the Fannin school, November 28, on account of an outbreak of scarlet fever.——The Seventh Ward school of Breensburg, Pa., was recently closed on account of an outbreak of scarlet fever and will not reopen until after the holidays.——The city health officer at Oshkosh has excluded from attending high school about twenty male students, on account of an outbreak of scabies; about the same number of girl students was excluded for the same reason.——The health commissioner of Baltimore announced, November 28, that 160 new cases of measles had been reported during the previous week, with two deaths.——Hardin County, Ohio, has had an outbreak of thirty cases of scarlet fever, mostly in Ada, Alger and McGuffey; eighteen cases were still under quarantine, December 1.

Bequests and Donations.—The following bequests and donations have been announced recently:

The Broad Street, Mount Sinai, Mount Lebanon, Presbyterian and St. Vincent's hospitals, all of New York, each $30,000, by the will of the late Mrs. Mathilde G. Sterne, payable after the death of a daughter.

The Southside Hospital, Bayshore, $10,000, and on the death of a daughter a similar amount to St. Vincent's Hospital, the Home for Incurables, Roosevelt Hospital and New York Dispensary, all of New York, by the will of the late William H. Wickham.

The three hospitals for crippled children in Minneapolis and St. Paul, $30,000, by the will of a crippled newsboy, who died in November.

The College of Physicians, Philadelphia, $10,000, by the will of the late Dr. Richard H. Harte, who specified in his will that the income from half of the amount to be used to purchase books and journals for the library, the collection acquired to be known as the Richard H. Harte Book Fund, and that the remainder be set aside to defray the expense of dinners to guests at various meetings.

The Brooklyn Home for the Blind, Port Jefferson, L. I., $1,500, by the will of the late James Burns.

The Hebrew Orphan Asylum, Montefiore Hospital for Chronic Diseases, Mount Sinai Hospital, New York, each $2,000, by the will of the late Solomon Libman.

Mount Sinai Hospital, New York, $1,000, by the will of the late Ida Held.

The New York Hospital, Hospital for Ruptured and Crippled, and New York Skin and Cancer Hospital, each $25,000; the New York Dispensary and St. John's Guild, each $15,000, by the will of Charles H. Rhinelander, who died in 1916, and whose residuary estate was recently accounted in court.

The New York Skin and Cancer Hospital, $1,500, by the will of the late Edward F. Gordon.

The Nursing Sisters of the Sick Poor, New York, $100, by the will of the late Anna A. Boyle.

St. Luke's Hospital, New York, $5,000; St. Mary's Free Hospital for Children; the Knickerbocker Hospital; the Harlem Eye and Ear Hospital, and the Home for Incurables, New York, each $3,000; the Misericordia Hospital and the Society for Relief of the Destitute Blind, each $1,000, by the will of the late Mary C. Van Cott.

The Jewish Hospital, Philadelphia, $5,000 by the will of the late Charles Alexander, to endow a bed to be known as the Charles and Fanny S. Alexander bed.

Kensington Hospital for Women, Philadelphia, $1,000 by the will of Mr. Ellis, who died at Orlando, Fla., last April.

The Newark Memorial Hospital, Newark, N. J., $5,000, by the will of the late Eliza L. Koegel.

Endowments and the Community Trust.—A group of physicians issued a statement, December 10, urging that endowments for medical research or the treatment of the sick or for medical education be kept free from narrow limitations and rigid conditions. It was said that the changing status of medical education and the advance in medical science makes "frozen endowments" of particular concern to the medical profession. In thirteen years, institutional orphanages have increased in the United States at the rate of one about every fifteen days, while the supply of orphans to fill them has shown signs of diminishing. Without deprecating the excellent work of many "asylums," the statement adds, it appears that changes in the problem of caring for dependent children has tended to lessen the need for new orphanages as compared with other social needs. Once endowments take rigid form for some specific purpose, it becomes exceedingly difficult to recast them. To meet the problem arising from "frozen endowments," there has been instituted the plan of the Community Trust, which provides a method of bringing together funds of any size, gives them permanent administration and preserves them from becoming "frozen." Each fund, large or small, constitutes an independent memorial and is placed for investment with any one of various national banks or trust companies, and the expenditures or income from each is supervised by a central distribution committee. While the statement outlines the object of the Community Trust to physicians, a more detailed description can be obtained from Dr. Walter B. James, 7 East Seventieth Street, New York, a member of the distribution committee. The statement is signed by Drs. George Emerson Brewer, Samuel A. Brown, George W. Crile, Charles L. Dana, D. Bryson Delavan, Arthur B. Duel, Emanuel Libman, Charles H. Mayo, William J. Mayo, James A. Miller, Bernard Sachs, Bentley Squier, George D. Stewart, William G. Thompson, Linsly R. Williams and Walter B. James.

FOREIGN

Medical Students in Germany.—The *Münchener medizinische Wochenschrift* states that the total number of male medical students in German universities has declined from 15,500 in 1913 to 7,196 in 1925, while the number of women studying medicine has increased from 868 in 1913 to 1,321 in 1925.

Fourth Autumn Dinner.—About 300 members and guests of the British Medical Association assembled in the Great Hall of the association's new home, October 21, for the fourth autumn dinner, which was in the nature of a house warming. The chairman of the council, Dr. Robert A. Bolam, occupied the chair, with the retiring president, Mr. J. Basil Hall, principal guest, on his right. Among those present were Sir William B. Leishman, director of the Army Medical Service; Vice Marshal D. Munro, director, Royal Air Force Medical Service; Sir St. Clair Thompson, president, Royal Society of Medicine; Miss Ivens, president, Medical Women's Federation; Sir Frederick N. Mott, president, Medico-Psychologic Association; Dr. George F. Buchan, president, Society of Medical Officers of Health; Mr. P. S. Roswell, president, Pharmaceutical Society, and Mr. J. H. Badcock, president, British Dental Association.

Beriberi Increasing in Japan.—According to the *Japan Medical World*, beriberi seems to be increasing in the Japanese army and navy. Official statistics covering the ten years ending in 1923 show that the number of cases of beriberi in the army in 1914 was 3.43 per thousand, and in 1923 10.47. The number of deaths per thousand in 1914 was 5.85; in 1923 it was 0.94. The number of beriberi patients in the navy in 1914 was 1.36 per thousand and 2.40 in 1923. These figures are small, compared with the incidence of beriberi from 1878 to 1883, when it was from 230 to 390 patients per thousand in the navy. The combined diet of rice and barley was adopted by the navy in 1886 and in the army in 1919. A society for the investigation of beriberi has been organized in Tokyo at the instance of Dr. T. Irisawa, former dean of the Imperial University Medical College, which will hold two general meetings a year. Communications to the committee should be addressed to the society at the Tokyo Imperial University Medical Department, Tokyo.

Personal.—Prof. Rudolf Kraus has been made president of the newly founded Vienna Society for Microbiology.——Subscriptions are being collected for the purpose of presenting a medal to Professor Mauclaire, Paris, on his approaching retirement from the Pitié. A bronze replica of the medal will be given for each subscription of 50 francs or more. The treasurer of the fund is M. Arnette, 3 rue Casimir-Delavigne, Paris.——The *Presse médicale* mentions the departure for the United States and Canada of Dr. J. Forestier, Aix les Bains, who has been invited by the American Radiologic Association to deliver a course of lectures on the work he has done with Dr. Sicard on iodized oil.——Dr. H. Hartmann has been reelected president of the A. D. R. M. (Association pour le développement des relations médicales) at Paris. He reports great progress in establishing postgraduate courses, and arranging for interchange of professors with other countries.——Dr. L. M. Pierra, 12 rue de Babylone, Paris, is the secretary of the international congress of the medical press of Latin nations, to meet at Paris in 1926. The main topics to be discussed are unification of terms and bibliography, rights in literary property, and the work of the medical press in organizing and reporting medical congresses.——The prize of the Marcel Benoist endowment, Zurich, has been awarded this year to Prof. H. Zangger, director of the medicolegal institute, Zurich, for his recently published work "Vergiftungen" (Poisonings).

Deaths in Other Countries

Dr. George Reid, formerly president of the Society of Medical Officers of Health and president of the Section of Medical Sociology of the British Medical Association, at Stafford, November 6, aged 70.

Foreign Letters

LONDON

(*From Our Regular Correspondent*)

Nov. 21, 1925.

The Health of School Children

Sir George Newman, chief medical officer of the board of education, has issued his report for 1924. Of about 1,500,000 school children inspected during the year in areas other than London, 20 per cent. were found to require medical treatment in some form, and a large number of others were found with defects which necessitated their being kept under observation. Considerable space is devoted to the health of the rural child, which is less satisfactory than that of the town child. It is pointed out that children cannot grow if their food is only bread and butter and tea, if their bodies are not rightly exercised, and if they live in cold and stuffy homes and schools. Among reforms advocated are that children under 6 should be discouraged from school attendance if the distance from school is excessive (or in winter during inclement weather); a sufficient midday meal should be secured for the child who cannot return home for it; facilities for the changing and drying of wet boots and clothing should be available in every rural school; insanitary rural schools should be made sanitary, and voluntary workers should be enlisted to organize education in mothercraft, domestic economy and child nurture and management, regarding which there is much ignorance and some neglect. The following table, which related to London, affords an idea of the incidence per thousand children inspected, of the various diseases of school children:

	1923	*1924*
Defective vision	62	62
Nose and throat disease	43	51
Ear disease	10	11
Lung disease (nontuberculous)	9	12
Skin disease	13	13
Squint	8	9
Eye disease	8	9
Anemia	8	9
Deformities	4	7
Defective hearing	5	6

In ten years the mortality among children from pulmonary tuberculosis has fallen by about 46 per cent., and from nonpulmonary tuberculosis by about 42 per cent., while the number of new cases of both forms has substantially diminished. When compared with the statistics for the population of all ages, these figures indicate that children offer a particularly hopeful field for specific antituberculosis measures and that a substantial measure of success, partly attributable to such measures, has already been obtained.

The Health of London

The report of the health officer for London, Sir William Hamer, for 1924, has just been issued. The death rate was 12.2 per thousand, which is slightly higher than in 1923, when the rate was 11.4, the lowest ever recorded. The infant mortality was 69 per thousand births, as compared with 61 in 1923, the latter being also a record year in this respect. The small rise in the death rate may be attributed to the prevalence of measles early in 1924 and to a slight increase in the deaths from influenza, bronchitis and pneumonia. The mortality from diarrhea and enteritis was lower than in 1923. The registrar-general estimates the total population of the administrative county of London in the middle of 1924 at 4,586,000. The births in 1924 numbered 85,147, being 6,515 fewer than in 1923. The birth rate was 18.6 per thousand, as compared with 20.1 in 1923 and 20 in 1922. During the last four years the number of births in London has declined by about 4,800 yearly. The rate has fallen continuously during the last fifty years at a rate of decrease of about 1.42 per thousand of population every five years. In the same period the marriage rate has remained much the same. There would have been a considerable decrease in the marriage rate but for the large increase of marriage during the war years. The decline in the marriage rate during 1921-1925 is too small to have played more than a negligible part in the concurrent fall of the birth rate. The decline in vaccination is such that Sir William Hamer considers the time not far distant when a serious epidemic can no longer be prevented. Deaths from cancer totaled 6,483, compared with 6,346 in 1923.

Links Between Mind and Matter

Sir Oliver Lodge, F.R.S., delivered the first of a series of lectures established by the British Science Guild as means of directing the attention of the public to the influence of science on human progress. Sir Oliver Lodge is the most striking example in this country of an eminent physicist who believes in psychic phenomena. His subject was "The Link Between Mind and Matter." He explained that he meant the impenetrable uniting ingredient or cosmic unit, which connected the otherwise dissociated or dissevered atoms of matter and enabled them to act on one another, even from a distance. This ingredient was essentially radiation—a disturbance in the ether or in space which traveled at one absolute velocity, which journeyed without loss or dissipation of energy, and which produced even at enormous distances its singular and striking results. "We are down among the foundation stones of reality," he said, "the laws which make matter possible, the laws which perpetuate the atoms of which our own bodies are composed. There are those who think that these material bodies represent ourselves, our personality, our memory and our character. If they can work out things on that hypothesis, by all means let them do so. But let them take the whole of the facts into account. The atoms are not isolated, and we are not isolated. Shall there be a link between atom and atom and not between mind and matter? The link may perhaps be traced through some further developments of physics. We are only beginning to understand the way in which matter acts on matter. We have not yet brought mind into the scheme. There must be a link between mind and matter and mind, and a corresponding link between mind and matter; for undoubtedly they do interact. There may be a link between mind and mind apart from matter. I think there is, but we are entering the region of speculation. Until we take the ether or radiation into account, our categories are incomplete." Sir Oliver Lodge concluded: "We cannot be satisfied with matter alone. We are bound to have a link between matter and matter, and if we keep our eyes open we shall find many other links, some of them suspected, some unsuspected."

Light for Animals in the Zoological Gardens

In a previous letter (The Journal, October 31, p. 1412), the provision of ultraviolet rays for monkeys by means of quartz globes in connection with electric light and the use of vita glass, which is transparent to the ultraviolet rays of the sun, was described. As this is a new field for the application of light therapy, some further information will be of interest. In the new reptile house to be erected at the London Zoo, modern devices for the variable heating of the cages, ventilation and drainage will be used. The roof lights, by which daylight will shine directly on the reptiles, are to be of vita glass, and there will be full provision for artificial sunlight from quartz incandescent lamps or a similar electric plant. Already in a temporary installation in the tortoise house, it has been found that iguanas, which mope in winter, even if kept sufficiently warm, respond at once to the light of quartz globes, and the most efficient plant to secure similar results will be designed. Dr. Leonard Hill, director of the department of applied physiology and hygiene of the Medical Research Committee, whose work on light therapy is well known, advised during the planning of the experimental monkey house and has promised to assist with the lighting designs of the reptile house. In the lion house a new roof with vita glass lights and an improved system of ventilation are being installed.

The General Medical Council

The General Medical Council has recently been the subject of abuse from the supporters of osteopaths and other irregular pretenders to the healing art, including many well known men, such as Bernard Shaw. Because in the course of its duties it has to do such things as remove from the register an anesthetist for working with an unqualified bonesetter, it is charged with being actuated by selfish trade-unionism. The president, Sir Donald Macalister, in opening the one hundred and twenty-second session, therefore fitly described the function of the council as prescribed by law. He pointed out that the council was a public department with judicial functions defined by statute and by the courts, working under the privy council and subject to supersession by the privy council if it defaulted. It was not vested with any power or duties for the protection of the medical profession other than those implied in the medical act of 1858; namely, "That persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners." For that purpose, obviously a purpose of public utility, the Medical Register was set up. The council's duty to the public was simply to insure that no one who was not legally qualified by adequate professional training and testing should get on the register, and that no one who by his conduct had forfeited his claim to be entrusted with the status of a legally qualified practitioner should remain on it. The legal privileges of the qualified practitioner, as compared with the unqualified, were few. He had no monopoly of practice, such as the law conferred on dentists and midwives in their specialties. The privileges were rather trusts than advantages. Thus, only the qualified could legally grant a valid medical certificate of illness or death, or legally prescribe a dangerous drug. These privileges were clearly based on the assumption that members of the profession might be trusted to deal honorably with the public. Whoever, therefore, abused that trust by misusing the privileges his status conferred, or by covertly enabling others for gain to elude their legal disabilities, was chargeable with misconduct "in a professional respect," and made himself liable to the penalty of removal from the register. As the law stood, he was then as free to practice as if he had not been registered and the public was as free to employ him, if it thought fit. But the council had neither the power nor the responsibility of controlling his conduct thereafter. The council was frequently confounded with voluntary organizations and societies of physicians, constituted for scientific and professional purposes. But the Council had no professional interest to serve other than the efficient performance of its specific duties laid on it by law in furtherance of the public welfare.

The Practice of Osteopathy

That the craze of osteopathy recently introduced into this country has attained some popularity is shown by the fifth annual meeting of the council of the Osteopathic Clinic, at which it was declared that during the last twelve months 6,000 treatments had been given. Lord Deehurst, speaking of the attitude of the controlling bodies of the medical profession against legislation sought by "qualified osteopaths," said that the Medical Council did not want osteopaths to be recognized because physicians could not practice osteopathy themselves, not having the necessary qualifications. They wanted osteopaths to take medical degrees first and even then would not give any guarantee that they would recognize the work of osteopaths. It would help osteopaths if they could call in the services of anesthetists and medical specialists. He could vouch for several cases which had been cured by osteopathy after having been given up by physicians.

PARIS

(From Our Regular Correspondent)

Nov. 23, 1925.

Kleptomania

M. Antheaume's attitude toward kleptomania is that kleptomania does not exist. So-called kleptomaniacs (mostly women) are in reality only common, ordinary thieves, in whose favor a plea of irresistible impulse is set up if they happen to belong to the well-to-do classes of society. Kleptomania should be eliminated from psychiatric nosology and should cease to be considered a valid excuse for an ordinary misdemeanor. It goes without saying that we must distinguish from so-called kleptomania the impulses to steal that may be presented by certain evident psychopaths, imbeciles, epileptics, and persons suffering from general paralysis or various forms of delirium. Before the Société de médecine légale, several other psychiatrists stated that they had never discovered any authentic cases of an irresistible impulse to steal.

So-called kleptomaniacs rarely operate in stores in which a strict watch is kept. They never seek to return of their own accord the stolen article. When they are finally caught, they never themselves invoke at first any pathologic defect as an excuse. That is always a secondary thought after their family or their lawyer has advised them to enter a plea of irresistible impulse. Antheaume proposes, as remedies: (1) mental prophylaxis through the organization in the large stores of Paris, by their initiative and at their own expense, of an effective perfectly apparent system of surveillance, which would leave pseudokleptomaniacs no hope of perpetrating a theft without being discovered; (2) intimidation of culprits by immediate arrest and conviction with suspension of sentence for the first offense, with or without the opinion of a psychiatric expert; (3) conviction and execution of the sentence in case of recurrence; (4) in certain cases in which it seems justified, the publication of convictions in the public press.

A Novel Source of Lead Poisoning

M. Bodron, public health commissioner in Brest, has published in the *Presse médicale* an article on a novel source of lead poisoning. Last April, the bureau of public health of Brest was faced with an epidemic of lead poisoning, the cause or source of which was unknown. The thirty-two patients, with three exceptions, all lived in the same section of the city (port de commerce), and inquiry brought out that all bought their bread of the same baker, and three persons employed in the bakery had been ill. The evidence pointed, therefore, to the bakery as the source of the intoxication. Examination of the sewer connections and of the water from the boiler or caldron gave a negative result. It was discovered, however, that the baker was using to heat his oven (a direct heating system) wood that had been obtained by breaking up old boats. Examination of the wood revealed that it was covered with paint that was rich in lead salts. The origin and the cause of the epidemic were thus demonstrated. In further substantiation, it was learned that the three patients who did not reside in the affected district were in the habit of eating bread that came from the incriminated bakery. In view of these facts, the mayor of Brest issued a decree, which was countersigned by the prefect of the department of Finistère, prohibiting within the limits of the commune of Brest the use of wood of demolished ships for baking. Legislation against the use, for baking, of wood derived from old boats is, however, not entirely new, for there were two ordinances dealing with the subject, issued in the department of the Seine, dated 1877 and 1898, respectively. The council of public health of the Seine has on several occasions, notably in 1914, rejected demands coming from dealers that the ordinance of 1898 be repealed. The council persists in refusing to permit the use, for baking, of "demolition wood," of whatever kind or origin. The oven used by the baker in question was heated by the direct heating system, but ovens with indirect heating systems are also dangerous when painted wood is used, by reason of the volatility of the lead salts and the readiness with which they become reduced to metallic dust under the action of charcoal. These vapors condense rapidly on the cold surface of the dough just as it is put into the oven.

Oleothorax

In a recent communication to the Academy of Medicine, G. Küss referred to the value of the method of oleothorax, as recommended by M. Bernou, in the treatment of pulmonary tuberculosis by artificial pneumothorax. Küss gave the precise indications for the use of oleothorax. It is advantageous during certain pleural effusions which so frequently complicate artificial pneumothorax. Oleothorax diminishes considerably the harmful effects of these effusions and facilitates their cure. It prevents annihilation of the partial pneumothorax in certain cases wherein continuance of this treatment is desirable. Furthermore, it makes possible permanent and effective compression of certain dense lesions that would resist compression by air or gas. Küss has invented a safe device for production of oleothorax. This device, which he presented recently before the Société d'études scientifiques de la tuberculose, has, among other advantages, that of permitting the measurement of intrathoracic pressure of the liquid petrolatum introduced. Küss holds that oleothorax deserves to be used more widely in phthisiologic practice.

ITALY

(From Our Regular Correspondent)

Oct. 30, 1925.

The Angelo Mosso Institute on Mount Rosa

The Angelo Mosso Institute, established on Mount Rosa, at an elevation of 3,000 meters above sea level and maintained for research on the physiologic effects of mountain regions, resumed operations in July. The institute has established a branch investigating center at the Margherita Lodge, which is 4,559 meters above sea level. The director of the institute, Dr. Amedeo Herlizka, professor of physiology in the University of Turin, is making a special study on solar radiation in high regions. Research students gathered here include Professor Morpurgo, who is investigating the effects of high altitudes on breathing; Professor Azzi, who is studying the phagocytic capacity of the blood in fatigue; Dr. Verdina, who is investigating the blood serum of fatigued persons from the immunologic point of view, and Dr. Arnaudi of the Serologic Institute of Milan, who is giving especial attention to the anaerobic bacterial flora of Monte Rosa. Among the foreign investigators may be mentioned Dr. E. Hung of Buenos Aires, who is conducting researches on the permeability of the skin of the frog, and Dr. H. Melchior of Berlin, who is pursuing botanic studies.

Interest of North and South America in Medical Studies in Italy

The University of Florence has received from Argentina 50,000 liras collected by Professor Dessy. The interest is to be used as the Guido Banti prize for researches in pathologic anatomy.

Prof. Aurelio Bianchi has sent 10,000 liras from Buenos Aires. The gift was sent to Professor Silvestrini, director of the clinic of internal medicine at the University of Perugia, and is to constitute a prize for the best research on phonendoscopy, to be presented to the university before June, 1926.

The Rockefeller Foundation is about to establish in Italian institutions a number of graduate fellowships in biologic or clinical subjects. Each student will be allowed 1,000 liras per month. The fellowships will extend to 1928. Appointments are for one year but are renewable for a second year. From those students who are successful in their researches, a number will be selected to pursue courses in other countries.

The First International Congress on Malaria

The first International Congress on Malaria, referred to in a previous letter, was held at Rome, October 4-6. The United States was represented by Dr. Hugh S. Cumming, Surgeon General and head of the U. S. Public Health Service; Colonel Russell of the Rockefeller Foundation; Drs. Hackett, McCallum, Thayer, King and Barber; Professors Strong, Bass, Fricks, Deeks, and others. The delegates from France were Drs. Brumpt, Lasnet, Marchoux, Mesnil and Sergent. The British representatives were Drs. James and Dale. Germany was represented by Professor Nocht; Belgium and its colonies, by Drs. van Campenhout and Broden; Brazil, by Dr. Humberto Gotuzzo; Colombia, by Dr. Luis Cuervo Marquez; Egypt, by Dr. Ahmed Bey Helmi; Hongkong, by Dr. McKenny, and the Netherlands by Dr. N. H. Swellengrebel. Dr. Reichmann, chairman of the health section of the League of Nations, was also present. The Italian delegation consisted of Senators Marchiafava and Sanarelli; Professors Ascoli, Bignami, Dionisi, Gosio, Sella, Bastianelli, Nazario, Alessandrini, Gualdi and Messea, and others. The government was represented by Mussolini, Federzoni, Suardo, the prefect of Rome, the royal commissioner of Rome (Senator Cremonesi), and others.

Dr. Massimo Sella of Rovigno discussed the results of anti-anopheles prophylaxis by the use of top minnows (*Gambusia*), imported from the United States, which destroy the larvae of the anopheles mosquito. Communications were presented by Professors Ghiron, Fontano, Neri, H. Durk (Germany), Bignami, Bastianelli and Monti. Professor Schilling spoke on the "Interpretation of the Significance of Biologic Conditions in the Blood of Malarial Patients," and papers were presented by Professors Etienne, Sergent, James, Brodel, Bentley, Nocht, Sadi de Bonen and Marzinowsky.

Professor Perez of Argentina proposed that an international institute against malaria be established in Rome, under the patronage of Italy, but with the aid of all nations, and that the first meeting be held in 1928. The Italian government accepted the proposal, and invited the concurrence of other governments interested.

Membership in the Royal Academy of Lynxes

At the recent election held at the Royal Academy of Lynxes, the following nationalists were chosen as members: Aldo Perroncito, professor of pathology at the University of Pavia, and Luigi Sabbatani, professor of pharmacophysiology at the University of Padua. As foreign members were elected: Lodovico Aschoff, Frederico Küster and Enrico Lebesgue.

Competitive Prizes Offered by a Scientific Academy

At the annual session of the Accademia dei Lincei, two new prizes in the field of vocational training and guidance were announced. Both prizes were established in the name of Gustavo Ragnoli and consist in gold medals valued at 5,000 liras each. The funds were furnished by the Istituto d'igiene, previdenza e assistenza sociale. One prize will be awarded to the commune, learned society or individual who presents the best bio-anthropologic study of a group of at least fifty elementary or grammar school pupils. This study must extend over a period of at least one year, and will be directed toward evaluating the physical and mental qualities of the pupils from the point of view of vocational guidance. The other prize will be bestowed on the economic or industrial society or on the indivdual that shall establish either directly or in cooperation with specialists a medical service for the selection of workmen, especially apprentices, on the basis of their physical and mental aptitudes. Competitors will be given two years in which to complete their work.

Modifications in the School Reforms Instituted by Ex-Minister Gentile

As previously mentioned, the minister of public instruction, Senator Gentile, established, among other things, the state examination for promotion in school and also for securing the right to practice a given profession after a school diploma has been obtained. While the desire to raise the standards of education met with approval, in a general way, there were criticisms of many of the details of the reforms. Senator Fedele, the present minister of public instruction, has modified some of the most bitterly opposed innovations, especially with reference to higher instruction. For example, assistants in universities may be transferred from one institutoin to another without reexamination. University competitive examinations will be open to all. The board of examiners, the makeup of which has been changed, will select three competitors who are capable of filling the chair. The faculty in which there is a vacancy will then select from the three candidates the future incumbent. Half of the superior council will be elected by the professors and half chosen by the minister of public instruction. On expiration of the terms of half of the present members of the superior council, their successors will be chosen by the professors.

Hygienic Propaganda Disseminated by Means of the Radiotelephone

The Unione radiofonica of Rome has broadcast a series of short lectures by Dr. Giovanni Pugliese on medicine and hygiene. One of the first subjects was "Errors and Preconceived Ideas on Tuberculosis." Briefly, the speaker explained tuberculous contagion and prophylaxis, emphasizing protection of children, the educative value of the sanatorium and the dispensary, and the absurdity of opposition to these beneficent institutions.

The Sanitary Council in the Colony of Eritrea

By a recent decree, the governor of the Italian colony of Eritrea on the Red Sea has created a medical council to deal with sanitary and hygienic matters. The sanitary council must keep the governor informed of health conditions in the colony and of the functioning of the various health services. It must present to the governor proposals as to the best hygienic and prophylactic measures to combat infectious diseases, and also submit suggestions with regard to the sanitary service. Dr. Ritucci, major in the army medical corps, has been appointed chief public health officer.

The New President of the Italian Red Cross Society

Senator Giovanni Ciraolo, for the last ten years president of the Italian Red Cross Society, has asked Prime Minister Mussolini to accept his resignation in order that he may devote all his time and energy to his project of an international league of public aid societies. Mussolini has accepted the resignation, at the same time appointing Senator Ciraolo a delegate to the League of Nations. The Marquis Carlo Centurione Scotto has already been inducted into office as the new president of the society.

BUDAPEST

(From Our Regular Correspondent)

Nov. 7, 1925.

The Modern Surgical Treatment of Pulmonary Tuberculosis

Dr. Nicholaus Roth, assistant at the university clinic, lectured before the Royal Medical Society on the modern surgical treatment of pulmonary tuberculosis. He said that this is the most important chapter in the progress of the medical sciences. A patient regarded as lost, not so long ago, can now be saved by surgical intervention. To be sure, the proper selection of cases requires great experience. The principle of surgical treatment is to place the sick lung at absolute or relative rest. Experience showed that tuberculous joints healed when put out of action. Experiments with immobilization of the sick lung were based on this assumption. Collapse therapy—this is the generally accepted term for it—may be total or partial. Collapse promotes cicatrization. The walls of cavities collapse if they are not exceedingly rigid, and if they are not fixed by adhesions to the parietal pleura. In the collapsed lung, circulation of blood and lymph is checked. In consequence of this the toxins and germs remain in loco. Thus can detoxication and the beginning of cicatrization be explained.

Surgical treatment is applied in three main ways: (1) artificial pneumothorax; (2) section of the phrenic nerve, and (3) extrapleural thoracoplasty. These can be performed independently or can be combined.

Indications for artificial pneumothorax are the following: (1) Severe, one-sided cirrhotic processes without adhesions. The prognosis of these cases is good. (2) Severe, one-sided, acinous, exudative and lobular caseous processes. The prognosis of these is less favorable than that of the former. (3) Moderately severe, progressive exudative processes. (4) Persistent hemorrhages.

Contraindications: (1) Extensive changes in the other side. It is well-nigh impossible to adhere strictly to this provision, because rarely is the other side entirely sound, and in some of these cases pneumothorax is indicated on relative grounds. For example, if partial collapse of the worse lung does not excite activity in the other side, complete collapse may be brought about. Thus successful procedures are described in the literature in which alternate compression was practiced. (2) Cases of caseous pneumonia. These are unsuitable for pneumothorax because the infiltrated tissues are unable to contract. (3) Other contraindications are extensive pleural adhesions of the other lung, chronic bronchiectasis, bronchitis, emphysema, asthma, rigidity of the chest, decompensated heart disease, intestinal tuberculosis, spondylitis, nephritis, nephrosis and diabetes. A frequent complication of artificial pneumothorax even if performed with the greatest precaution is a pleuritic exudative process. Some authors say, however, that exudates promote immobilization, and probably they do stimulate cicatrization. An undoubted disadvantage of pneumothorax is its excessive duration; on an average, two years. This, however, is not of great moment in cities, where patients may call on their physicians. Pneumothorax therapy has come to occupy its deserved place in our fight against tuberculosis. The initial exaggerations have entirely ceased.

By section of the phrenic nerve on one side the corresponding half of the diaphragm is paralyzed; the cone of the diaphragm forces itself into the pleural cavity and partially compresses the lung, chiefly the lower lobe. The section must be repeated several times, because the cut ends of the nerve grow together in a relatively short time. To do away with this, a portion of the distal part of the nerve is removed. The incision is made at the outer edge of the sternocleido-mastoid muscle, close to its lower attachment. It is not easy to find the delicate, thin nerve, superimposed on the scalenus muscle. Roth has seen the phrenic nerve confounded with a piece of fascia and has seen injury of the jugularis.

Indications for section of the phrenic nerve are as follows: (1) Circumscribed tuberculosis of the lower lobe. (2) Severe, moderately progressive, feverish processes, involving mostly one side and in which pneumothorax was not feasible because of adhesions. (3) Advanced processes involving both sides. Patients so affected cannot be cured, but their condition can be alleviated and, as Brunner says, it would be regrettable not to improve the patient's condition by an operation which, in general, is so harmless. (4) The most extensive field for phrenicotomy is severe, less progressive, subfebrile, exudative tuberculosis confined mostly to one side and in which pneumothorax has failed. If the patients feel better after this operation, thoracoplasty, in addition, is to be recommended. (5) It may be performed as an adjuvant to thoracoplasty, in cases of productive, cirrhotic, cavernous phthisis, the elimination of abdominal breathing promoting lung rest. (6) In cases of cirrhotic tuberculosis and pleural adhesions. If these lead to excessive contraction, the heart may be impaired in its function by the continuous dragging. The relaxation following paralysis of the diaphragm leads to cessation of this symptom. (7) It might be considered as life saving in cases of dangerous hemoptysis, in which pneumothorax cannot be performed. (8) In cases of artificial pneumothorax in which collapse of the lower lobe is impeded by fibrous adhesions. (9) As the completion of artificial pneumothorax, if there is no occasion for reinjection of gas.

Roth's experiences with this method lead him to conclude that phrenicotomy is a good measure, but we have to be very cautious not to transgress the limits of its indications. We must bear in mind that it cannot replace pneumothorax, and Roth would regard it an error to perform it in cases in which pneumothorax is possible. In one single instance he could justify this; namely, if, for financial reasons, the lengthy pneumothorax treatment is not practicable. We must not forget that pneumothorax, though admittedly of long duration, leaves no permanent traces, while the sequela of phrenicotomy, paralysis of the diaphragm, is irreparable.

The third surgical method is extrapleural thoracoplasty. This is a heroic operation, involving paravertebral resection of the tenth and eleventh ribs. Its indication is clear from what has been said. It is chiefly indicated in adhesive cirrhotic processes, but its relative indications, mentioned above, are not to be neglected. Roth has seen wholly hopeless cases become afebrile and patients regain capacity for work. All three methods that cause collapse may be combined.

Roth gives only a short sketch of this therapeutic method but it denotes a tremendous advance. The hygienic, dietetic, climatic, sanatorium treatment is pushed into the background. Our ideal is chemotherapy. Even this may be not very far distant.

Regulations on "Patent Medicines"

A regulation recently promulgated by the ministry of public health and sanitation requires that no person shall sell or offer for sale any "patent medicines" within the territory of Hungary until a full statement has been deposited with the minister of public health, showing the several ingredients contained in the medicine, and the quantity or proportion of such ingredients. At first it was proposed to make it compulsory to publish the composition on the label; but, owing to the opposition of certain manufacturing firms, this intention was, unfortunately, abandoned. Moreover, it is ordered that the label of every "patent medicine" containing poison shall be distinctly marked with words stating that fact. The penalty for breach of either regulation is a fine not exceeding ten million crowns; that is, about $150.

Marriages

Josias Benjamin Hibbetts, Jr., Nashville, Tenn., to Miss Miriam Burkloe Brown of Baltimore, September 29.

Samuel Fitzsimmons Ravenel, Greensboro, N. C., to Miss Katherine Parr Brown of Baltimore, September 29.

John Harvey Graff, Memphis, Tenn., to Miss Elna Lucie Rasmussen of Sidney, Mont., September 22.

Jabez North Jackson to Mrs. Florence Hinkle Storey, both of Kansas City, Mo., October 28.

Bruce L. Fleming, Philadelphia, to Miss Estelle Leedrop of Phillipsburg, N. J., in October.

Lindsay S. Milne to Miss Marian Young, both of Kansas City, Mo., December 15.

Harry S. Arkin, Chicago, to Miss Irene H. Kraus of New York, November 18.

Deaths

Nathan Edwin Brill ⊕ New York; Medical Department of the University of the city of New York, 1880; professor of clinical medicine, Columbia University College of Physicians and Surgeons since 1910; member of the Association of American Physicians, the American Neurological Association, the New York Neurological Society, the American Psychopathological Association and the New York Pathological Society; on the staffs of the Hebrew Orphan Asylum and Mount Sinai Hospital; served during the World War; in 1910 discovered a form of typhus fever known as Brill's disease; aged 65; died, December 13, following a long illness.

Gershom Hyde Hill ⊕ Des Moines; Rush Medical College, Chicago, 1874; lecturer on insanity, State University of Iowa College of Medicine, 1890-1906; professor of mental diseases, Drake University College of Medicines, Des Moines, 1903-1913; member of the American Psychiatric Association; assistant physician, 1874-1881, superintendent, 1881-1902, Independence (Iowa) Hospital for Insane; formerly on the staffs of the Congregational, Mercy and Methodist hospitals, where he died, November 24, aged 79.

J. Matt Gordon ⊕ Weatherford, Okla.; Medical Department of the University of Illinois, Chicago, 1905; president of the Custer County Medical Society; for many years chairman of the board of education; served in the M. C., U. S. Army, with the rank of captain, during the World War; aged 60; died, November 26, of nephritis.

Harry Ernest McCall, St. Louis; State University of Iowa College of Medicine, Iowa City, 1903; member of the Iowa State Medical Society; past president of the Taylor County (Iowa) Medical Society; served during the World War; aged 50; died, November 23, of angina pectoris.

Thomas Dunn Hutton, Glade Spring, Va.; Medical College of Virginia, Richmond, 1894; member of the Medical Society of Virginia; for many years secretary of the Washington County Board of Health; aged 56; died, November 19, of heart disease.

Earle Worthington Weathers, Elkton, Ky.; Louisville Medical College, 1905; member of the Kentucky State Medical Association; mayor of Elkton; aged 43; died, November 21, at a hospital in Hopkinsville, of injuries received in an automobile accident.

Henry Rutherford Morrison, Rockbridge Baths, Va.; University of Virginia Department of Medicine, Charlottesville, 1887; member of the Medical Society of Virginia; aged 60; died, November 11, in a hospital at Richmond.

William J. Ragan, Shawano, Wis.; Milwaukee Medical College, 1898; member of the State Medical Society of Wisconsin; aged 59; died, November 27, at St. Mary's Hospital, Milwaukee, following an operation.

Albert Evans Tatman, Eureka Springs, Ark.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1904; veteran of the Spanish-American and World wars; aged 55; died, November 24, of heart disease.

Henry Granville Godfrey ⊕ Philadelphia; Jefferson Medical College of Philadelphia, 1900; formerly assistant demonstrator of clinical medicine at his alma mater; aged 50; died, October 27, of heart disease.

Byron Ernest Finley, St. Louis; Kentucky School of Medicine, Louisville, 1897; member of the Missouri State Medical Association; aged 49; died, August 15, at Los Angeles, of chronic nephritis.

William H. Dewing, Clayville, N. Y.; Hahnemann Medical College of Philadelphia, 1882; for many years health officer of Clayville; aged 67; died, November 24, at the home of his son in Scotia.

Charles E. Rowe ⊕ Hubbell, Mich.; Northwestern University Medical School, Chicago, 1905; past president of the Houghton County Medical Society; aged 49; died, November 24, of septicemia.

Christian Lenker ⊕ Schuylkill Haven, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1877; Civil War veteran; aged 83; died, in November, of heart disease and senility.

Caroline North Stevens, West Cornwall, Conn.; Tufts College Medical School, Boston, 1898; member of the Connecticut State Medical Society; aged 51; died recently, of pulmonary embolism.

Reinhart F. Schwartz, Charlotte, Iowa; Medical Department of the University of Illinois, Chicago, 1906; member of the Iowa State Medical Society; aged 42; died, November 22, at Clinton.

Perry Hardy Doughty, Juneau, Wis.; Keokuk (Iowa) Medical College, 1892; member of the State Medical Society of Wisconsin; aged 57; died, November 21, following a long illness.

Thomas Francis Darby, River Point, R. I.; Baltimore Medical College, 1898; member of the Rhode Island Medical Society; aged 50; died, November 23, of heart disease.

George P. Knight, Monticello, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1876; county health physician; aged 72; died suddenly, November 24, of heart disease.

John W. Knox, Stewardson, Ill.; Medical College of Ohio, Cincinnati, 1873; served as postmaster, 1872-1885; formerly a druggist; aged 90; died, November 20.

George Gunn, San Francisco; California Eclectic Medical College, Los Angeles, 1893; aged 62; died, November 24, of ruptured aneurysm of the aorta.

Benjamin Franklin Tichenor, Crescent City, Fla.; Kentucky School of Medicine, Louisville, 1891; aged 59; died, November 18, of angina pectoris.

Wilfred Ellsworth Rounseville ⊕ Attleboro, Mass.; Medical School of Harvard University, Boston, 1909; aged 43; died suddenly, in November.

Clifton Mears Rosin ⊕ New York; Bennett College of Eclectic Medicine and Surgery, 1907; aged 41; died, November 24, at Philadelphia.

Carr Warder Newman, Hinton, Mo.; Kentucky School of Medicine, Louisville, 1894; aged 65; died, in November, of cerebral hemorrhage.

Andrew J. Campbell, Elizabethtown, Tenn.; University of Tennessee College of Medicine, Memphis, 1892; aged 69; died, October 5.

David J. Roberts, New Rochelle, N. Y.; New York Homeopathic Medical College and Hospital, 1886; aged 69; died, November 23.

Edward C. Cartledge, Atlanta, Ga.; Atlanta Medical College, 1895; aged 58; died, November 28, following a long illness.

James M. Wheat, Coker, Ala.; University of Nashville (Tenn.) Medical Department, 1907; aged 52; died, November 20.

Alberta Reed Carpenter, Hustonville, Ky.; Woman's Medical College of Cincinnati, 1895; aged 58; died, November 2.

Franklin Maynard Eaton, Calais, Maine; Medical School of Harvard University, Boston, 1885; aged 64; November 22.

William Corpron, Yakima, Wash.; University of Michigan Medical School, Ann Arbor, 1891; aged 61; died, October 24.

Frank D. Soverin, Braceville, Ohio; Toledo Medical College, 1891; aged 64; died, October 3, following a long illness.

Alice E. Loomis, Jefferson, Ohio; Cleveland University of Medicine and Surgery, 1890; aged 67; died, October 16.

Roderick L. Fraser, Victoria, B. C.; Jefferson Medical College of Philadelphia, 1891; aged 65; died, November 15.

Frank Allan Kinsey, Orange, Calif.; Missouri Medical College, St. Louis, 1898; aged 55; died, November 11.

William Charles Wall, Atlanta, Ga.; Louisville Medical College, 1894; aged 70; died, November 19.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

VITALAIT NOT ACCEPTABLE FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report. W. A. PUCKNER, Secretary.

"Vitalait" is the uninforming name under which the Vitalait Laboratory of Newton Centre, Mass., markets a culture of *B. acidophilus.* It is so named on the label, but no statement of the number of viable organisms contained in a given quantity of the culture is given.

In the advertising for Vitalait which is sent to physicians, the generally discarded autointoxication theories of Metchnikoff are used as a warrant for recommending its use in a host of conditions. On this basis, the booklet "Vitalait and Its Uses" gives sweeping recommendations for the use of the product. In autointoxication it is said that "there is no known therapeutic aid which can equal Vitalait"; in neurasthenia it is said that "the favorable results from Vitalait . . . have made it the 'first thought' of most physicians"; neuritis is said to be "one of the many conditions where Vitalait acts as if by magic." In general, Vitalait is said to be "the magic wand in the physician's hand." The booklet also states that Vitalait is of value indirectly in anemia, chlorosis, dropsy, dyspepsia, eclampsia, fevers, gastralgia, gastritis, headache, high blood pressure, influenza, insomnia, nephritis, obesity, obscure pains and typhoid fever.

A layman who wrote to the Vitalait Laboratory, Inc., of Newton Centre, Mass., for information received a letter signed "R. D. Turner, M.D., President." Enclosed with the letter were two pamphlets and an order blank. One pamphlet, entitled "Vitalait," with subheads, "What it is," "What it does and How it does it," explains:

> "Vitalait helps the system to get rid of poisons formed by the activities of the body cells."

Also:

> ". . . among the diseases caused by intestinal toxemia may be listed acne, anemia, arterio-sclerosis, arthritis, asthma, auto-intoxication, catarrh of the intestines, colitis, constipation, diarrhea, gastritis, gout, hay fever, headache, high blood pressure, influenza, insomnia, lumbago, migraine, muscular rheumatism, myalgia, neurasthenia, neuritis, obscure pains, skin diseases, etc."

The second pamphlet "Vitalait and its Uses" is plainly addressed to the public. It begins with a statement that the acquisition and maintenance of vigorous health depends on the normal functioning of every part of the human body and that this is governed by proper assimilation and the prompt and efficient elimination of waste products. It then expounds how waste material accumulates, how this accumulation is putrified by the bacteria eaten with the food, and how the poisons formed are carried to the various tissues "where they exert their deleterious influences." It is then said:

> "In the joints they cause arthritis, rheumatism, etc.; in the nerves, neuralgia and neuritis; in the blood vessels, arteriosclerosis or hardening; in the stomach, gastritis and indigestion; in the intestine, constipation or diarrhea; in the brain, headache, lassitude, etc.; in the muscles, pain or general weakness, and so on throughout the whole system."

After thus depicting the evil effects of "autointoxication," the pamphlet proceeds:

> "It is obvious that if a person could regularly put into his intestine the helpful *Bacillus acidophilus,* he could prevent the terrible poisoning caused by the harmful bacteria, or if the harmful ones had already obtained a foothold, he could restore them and permit his body to free itself of the accumulated poisons and regain its normal healthy state."

To this end, the Vitalait Laboratory of Newton Centre, Mass., offers to aid the reader in preventing or overcoming autointoxication by supplying him with the needed panacea, Vitalait.

Vitalait (Vitalait Laboratory of Newton Centre, Mass.) is unacceptable for New and Nonofficial Remedies because it is marketed under a noninforming name; because the claims made for it are unwarranted and misleading; and because it is exploited to the public in a way to lead not only to its use for imaginary ills, but also for conditions in which correct diagnosis and rational medical treatment are all important.

Correspondence

SERUM FOR INFANTILE PARALYSIS

To the Editor:—In a communication in THE JOURNAL, September 26 (page 995), Dr. George Draper makes certain points with which I must disagree. With one, however, the necessity for a preparalytic diagnosis to secure the best results in any form of serum treatment, all clinicians will heartily concur.

Dr. Draper favors the use of serum from patients recovered from acute poliomyelitis and cites a specific case in which, by the administration of such serum, a baby with infantile paralysis recovered without the onset of paralysis. He acknowledges that previous reports of the use of serum from recovered patients with poliomyelitis have not been encouraging, but attributes this to the giving of insufficient serum.

The proper dose, according to Dr. Draper, should be 15 c.c. intraspinally, with from 150 to 200 c.c. of serum intravenously, requiring about 500 c.c. of blood. He thinks that the blood might either be secured from recovered patients by health boards, or bought directly from the patients, if not given by them gratuitously.

Dr. Draper refers to Rosenow's serum only to condemn it. He states that nobody "has ever produced infantile paralysis in monkeys." In the (Mayo) *Clinic Bulletin* (Sept. 23. 1924), Rosenow is reported as reproducing in rabbits with remarkable verisimilitude the various types of human poliomyelitis by means of cultures of his pleomorphic streptococci taken from the nasopharynx of patients.

I have used Rosenow's antistreptococcic poliomyelitis serum for several years and consider it invaluable. Dr. Draper affirms that serum from recovered patients "is of no value if paralysis has already occurred." I do not agree with this statement at all with the use of Rosenow's serum, although the earlier it is given the better. Thus, within a few weeks an adult of 34 was seen in consultation in a distant town with great rigidity of the neck and back, severe headache and backache, muscular twitchings, fever and vomiting, all appearing within twenty-four hours. Rosenow's serum was sent but, before its arrival (twelve hours later), paresis had affected one leg and difficulty in swallowing occurred. Two doses of Rosenow's serum were given intravenously; the paresis disappeared in a day and the difficulty in swallowing within a few days, and the patient made a complete recovery. For the first time in the history of the small town in which the patient lived, three cases of infantile paralysis had occurred, and within a week. The case recorded is the only one in which the patient lived.

This brings up the manner of giving the serum. Dr. Draper affirms that the injection of a foreign serum intraspinally is a dangerous matter in increasing congestion of the cord in poliomyelitis and, as in the previous sentence he had been speaking of Dr. Rosenow's serum adversely, one would naturally infer that Dr. Rosenow's serum is given intraspinally. This is not the case, and Dr. Rosenow has repeatedly warned against its use in this way. His serum is injected intravenously or intramuscularly, a much easier method than intraspinally.

Dr. Draper, with his exceptional training, ability and experience recognizes the futility of his single case proving anything in respect to the therapeutic value of human serum, and so do I.

The case recorded will serve to offset Dr. Draper's, and it is difficult for us not to parade our apparent therapeutic successes.

Every clinician with much experience knows that in epidemics of infantile paralysis the majority of patients do not develop paralysis at all and recover spontaneously without any treatment whatever; that the paralysis may be naturally slight and rapidly disappear; that the degree of virulence and mortality vary in the most extraordinary manner in different outbreaks, and that the beneficial effect of lumbar puncture alone is sometimes surprising.

While I have not seen Dr. Rosenow's reproductions in animals of human poliomyelitis, I have observed and been amazed by the almost miraculous reproduction of epidemic encephalitis in rabbits by Rosenow with cultures of his green-producing streptococcus taken from patients. It is difficult, indeed, not to be greatly impressed by the marvelous mimicry of the various forms of the disease in man in their every detail.

To look at the matter in a practical way, what have we to aid us without the serum of Rosenow in epidemic encephalitis and acute anterior poliomyelitis? Human serum is not hyperimmune, as is Rosenow's, and its supply is and must be limited and, as in the case of serum from recovered influenza pneumonia patients, its curative effect is questionable (Peabody).

Kenelm Winslow, M.D., Seattle.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TREATMENT OF TETANUS

To the Editor:—I have now under treatment a case of tetanus. I gave the patient 30,000 units of antitetanic serum intraspinally, the second day after the onset of the disease. At the same time I gave him 30,000 units intravenously. He began to improve rapidly, but still after five days his back muscles and jaws are firmly spastic. He feels well, and apparently is recovering, except for this contraction. Is it advisable to give him any further antitetanic treatment, in view of his rapid improvement, or shall I wait for this muscular rigidity gradually to subside?

M.D., Illinois.

Answer.—In persons recovering from tetanus, the rigidity of muscle groups subsides slowly, and therefore the persistence of rigidity for a number of days in a case such as that described, in which an adequate dose of antitetanic serum has been given, is not an indication for repetition of the serum.

A rational treatment of tetanus by antitoxin requires a clear understanding of the distribution of the tetanus toxin in the body of the patient. Following the receipt of the wound and the introduction of tetanus bacilli or spores, the production of tetanus toxin proceeds at a rapid or slow rate depending on whether the conditions of the wound are favorable or unfavorable for the growth of the bacilli.

As the toxin is formed, it is either absorbed by the motor end plates of nerves in the vicinity of the wound, or enters the lymphatics, to pass into the blood stream, and thence be absorbed by the motor end plates of nerves all over the body. The toxin travels centrad along the nerves at a fairly uniform rate, and consequently the toxin traveling along the shortest nerves first reaches the central ganglion cells, with resulting spasm in the muscles supplied by them. Trismus is therefore usually the earliest symptom of tetanus, with cervical rigidity following soon afterward, no matter where the location of the wound. In certain rare cases in which toxin production is very slow, and small in amount, rigidity of an extremity may precede trismus.

When the presence of tetanus is first recognized, the toxin is then already widely distributed in the body. The intravenous injection of one large dose of from 30,000 to 40,000 units of antitoxin will neutralize so far as is possible the toxin in the blood stream. The intrathecal injection of 10,000 units will neutralize, to some extent, toxin reaching the spinal cord.

If a fatal dose of toxin has not already reached the central nervous system and become inaccessible to neutralization by antitoxin, treatment by antitoxin will help to save life. Obviously, antitoxin should be given in adequate doses at the earliest possible moment after recognition of the disease. Symptomatic treatment by sedatives such as bromids and chloral, abundance of fluids and the maintenance of quiet surroundings are important. Magnesium sulphate given intrathecally or by intravenous injection to reduce nervous irritability are warmly advocated by some, and seem often to be of value. Their use requires great care to avoid overdepression, with interference with respiration.

MEAT AND PASTRY IN THE DIET—COD LIVER OIL

To the Editor:—1. There have been recently published in some of our most popular periodicals several autobiographic articles by people in the limelight explaining their methods of keeping fit. One of these never eats meat; another, only chicken or squab; a third, only white meat or fish. All avoid "red meat." Have we any scientific proof that a moderate serving of meat once a day is harmful to any undiseased person of whatever age? Another item frequently stressed is the elimination of all pastry from the diet. Is there any objection to a moderate amount of pastry if it does not crowd out other needed foods or if it is not added to an already sufficient number of calories? In other words, is it harmful in itself? 2. I recently heard a cooking teacher advise the use of a pinch of cayenne pepper in all meat and vegetable dishes because "it is a wonderful stimulant to digestion." Your opinion, please? 3. In the event of cod liver oil causing urticaria in an infant, what would you recommend?

M. D. M., M.D., Lima, Ohio.

Answer.—1. All these various apparently mutually contradictory methods have in common a restriction in diet. This leads to moderation in eating, which is the great desideratum. A moderate amount of meat once a day is not harmful, nor is there any objection to a reasonable indulgence in pastry.

2. The less spicing one can get along with, the better. Condiments and spices, it is true, stimulate digestion; but they also irritate the stomach, the liver and the kidneys; and there is a tendency to progressive increase in their use. People of vigorous digestion require little seasoning. Unfortunately, the time does come, as we get older, when we require a certain amount of seasoning to help along in digestion; and, used in moderation, it is more beneficial than harmful. If cayenne pepper stimulates appetite and digestion it may be used occasionally, but any stimulant becomes less efficient on continuous use.

3. If an infant has rickets and an idiosyncrasy against cod liver oil, actinotherapy in the form of sun baths or ultraviolet ray exposures should be employed. Cod liver oil extract and irradiated foods have not yet been developed to a sufficient extent to be commercially obtainable in reliable form.

LONG CONTINUED USE OF INSULIN

To the Editor:—Has the long continued use of insulin, even in mild dosage, any unfavorable tendency? On the other hand, has experience demonstrated any favorable effect to be expected? This refers to a patient, aged 68, who has had gangrene of one extremity, amputation and healing, although arteriosclerosis is quite markedly present.

P. W. V., M.D., Iowa.

Answer.—In Medicine Monographs, Volume 6, Insulin and Its Use in Diabetes, by J. J. R. Macleod and W. R. Campbell (Baltimore, Williams & Wilkins Company, 1925), the authors say that three years of insulin treatment of patients with severe diabetes, with a lack of any evidence of deleterious effects, is sufficient guarantee that insulin can be continuously used without its value becoming impaired by unforeseen occurrences.

"The insatiable hunger of the emaciated, undernourished diabetic patient disappears with the improved state of nutrition, and is replaced by a healthy appetite for regular meals. We have found that the menstrual function has returned in several instances; so also, occasionally, has sexual desire. Eyesight usually improves in those cases with lesser degrees of local damage. The restoration of physical vigor is such that most patients are able to return to work. Most interesting is the change in the mental state of the patient. From depression, melancholia, inability to think, and often black despair, patients recover to an astounding degree their mental alertness, cheerfulness and interest in their surroundings. Irritability and insomnia disappear. . . . Insulin provides for some patients an opportunity for resting the pancreatic function, which was impossible by other methods of treatment, and as a result increases in tolerance are not uncommonly observed . . . The proportion of patients with uncomplicated diabetes who find it possible to discontinue insulin after a time is comparatively small, but many show an increase in tolerance which, though small, is yet sufficient to render it possible to supply a working diet with the same dose of insulin as was previously necessary when only a basal maintenance diet could be given. In some cases the insulin dosage may even be reduced. It seems possible that this so-called recovery of tolerance which usually occurs in the first months after treatment with insulin should be regarded rather as release of a latent tolerance submerged by previous overwork of the pancreas.

"The question of an actual regeneration of islet tissue must be very cautiously approached. It can be settled only by time, and it seems unfair to arouse hopes that are not justified by experience. In some of the mild cases and particularly in the young this is a possibility. It may be pointed out that children who have not attained adult body weight present the additional possibility that, under careful treatment and rest of the pancreas with insulin, a normal growth of the pancreas with increase in age may occur and thereby a greater tolerance for carbohydrate may be acquired."

From pages 159 and 160, we quote:

"The aged patient generally shows a much less rapid recovery of strength, gains weight more slowly, and he requires a proportionately larger dose of insulin to produce a given amount of improvement. . . . Aged diabetic patients also suffer from many complications in part related to their age and also contributed to by the diabetic state. Coldness, numb extremities, muscle cramps, paresthesia, neuritis, ataxia, incoordination, etc., are dependent usually on permanent organic changes in the circulatory and nervous systems, and the possibilities of improvement under insulin are rather remote."

INTESTINAL INFLUENZA

To the Editor —Please prepare or have prepared an editorial or, in some way, give us your opinion, or the opinion of others, on this so-called intestinal influenza that we hear so much about in country practice. We have lately consulted several authorities on this supposed disease and can find no one man or set of men that will agree or even are willing to admit that there is such a disease I would appreciate much to have it answered fully or to leave it for open discussion and get the opinion of others on this subject.

C. J. SMITKAY, M D, Belle Plaine, Iowa

ANSWER —There is no reasonable doubt of the existence of an intestinal form of influenza which in certain pandemics has been noted to occur in a little more than 1 per cent. of all cases of the disease. Authoritative information on this subject may be found, for instance, in the volume on Influenza (Nothnagel's Practice, Philadelphia, W. B Saunders Company, 1905). Of course, diagnosticating intestinal influenza is quite likely to be erroneous in the absence of an epidemic. Until the etiologic factor of influenza has been isolated, we can make a positive diagnosis of the disease only from its epidemic or pandemic character.

INGROWN HAIRS AND PAINFUL SKIN

To the Editor.—I have a patient who has many ingrown hairs on his face, making it impossible for him to shave His skin has become tender and slightly edematous I have used various oils and ointments, electrolysis not being practical, as the ingrown hairs are too numerous and the skin too tender. This man is in business, and the condition is embarrassing, besides being painful. Kindly outline any treatment, besides that I have enumerated, or give me some ointment combination that I could prescribe. (Kindly omit name.)

M.D, Chicago

ANSWER.—Patients who think they have sore face from ingrowing hairs are usually mistaken. The trouble is usually not ingrowing hairs but arises from the fact that such patients keep the face sore either by digging for suspected ingrown hairs or by cutting off the conical points around the hairs in shaving. The course to pursue is, first to stop picking at the face; then, not to shave close; and, finally, to wash the face lightly after shaving and at night with a mildly astringent solution. For this purpose a solution of 8 per cent. aluminum acetate, 1 ounce (30 c c.), to a pint (475 c c.) of water may be recommended. But picking at the face must be stopped!

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 12. Chairman, Dr. S. W. Welch, Montgomery.

ARIZONA. Phoenix, Jan 5 6 Sec, Dr. W. O. Sweek, 404 Heard Bldg, Phoenix

COLORADO: Denver, Jan. 5. Sec, Dr. David A. Strickler, 612 Empire Bldg, Denver.

DISTRICT OF COLUMBIA Jan 12 Sec, Dr. Edgar P. Copeland, Apt 104, Stoneleigh Court, Washington, D. C

HAWAII. Honolulu, Jan. 11. Sec., Dr. G. C. Milnor, 401 So. Beretania St, Honolulu.

ILLINOIS: Chicago, Jan. 19-21. Supt. of Reg, Mr. V. C. Michels, Springfield, Ill.

INDIANA: Indianapolis, Jan. 12 Sec, Dr. W. T. Gott, 421 State House, Indianapolis

MINNESOTA: Minneapolis, Jan. 5-7. Sec, Dr Thomas S. McDavitt, 734 Lowry Bldg., St Paul.

NEW YORK: Albany, Buffalo, New York, Syracuse, Jan. 25 28. Chief, Mr. Herbert J. Hamilton, Department of Education, Albany.

NORTH DAKOTA: Grand Forks, Jan. 5 Sec, Dr George M. Williamson, Grand Forks

OREGON: Portland, Jan 5 7. Sec, Dr. N. C. Coe, 1208 Stevens Bldg, Portland

PENNSYLVANIA: Philadelphia, Jan. 26 30. Act Sec, Mr. C. D. Koch, Harrisburg.

RHODE ISLAND: Providence, Jan. 7. Sec, Dr. Byron U. Richards, State House, Providence

SOUTH DAKOTA Pierre, Jan 19. Dir. Med Licensure, Dr. H. R. Kenaston, Bonesteel, S D.

UTAH: Salt Lake City, Jan. 5 Director of Reg, Mr. J. T. Hammond, 412 State Capitol Bldg, Salt Lake City.

WASHINGTON Olympia, Jan 12. Sec, Mr. William Melville, 15 Insurance Bldg, Olympia.

WEST VIRGINIA Charleston, Jan. 19. Sec, Dr. W. T. Henshaw, State Health Department, Charleston

WISCONSIN. Madison, Jan. 12-14. Sec, Dr. Robert E Flynn, 315 State Bank Bldg, La Crosse

Louisiana June Examination

Dr. Roy B. Harrison, secretary of the Louisiana Board of Medical Examiners, reports the written examination, held at New Orleans, June 11-13, 1925. The examination covered 10 subjects, and included 100 questions. An average of 75 per cent. was required to pass. Of the 57 candidates examined, 56 passed and 1 failed. Four candidates were licensed by reciprocity. The following colleges were represented:

College PASSED	Year Grad.	Per Cent
Loyola University School of [illegible]		88 8
Tulane University of Louisia		80 1, 87, 87 3, 87.4, 87 6, 8 88.2, 88 3, 88.4, 88 5, 8 88 9, 88 9, 89, 89 2, 8 89 6, 89 7, 89 7, 89 8, 8 90.4, 90 4, 90 6, 90 9, 9 [illegible] 91.4, 91 7, 91 9, 92 1, 92 2, 92 7, 93 5
Meharry Medical College	(1924)	83 6
University of Tennessee College of Medicine	(1924)	83 8

College FAILED	Year Grad	Per Cent
Meharry Medical College	(1914)	71.5

College LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Physicians [illegible]		Illinois
Tulane University of		Alabama
University of Michiga		Michigan
University of Pennsyl		Penna

South Carolina June Examination

Dr. A. Earle Boozer, secretary of the South Carolina Board of Medical Examiners, reports the written examination held at Columbia, June 23-25, 1925 The examination covered 18 subjects and included 180 questions. An average of 75 per cent. was required to pass. Thirty-six candidates, including 1 osteopath, were examined, all of whom passed. Seven were granted licenses through reciprocity. The following colleges were represented.

College PASSED	Year Grad	Per Cent
Harvard University	-----	88 5
Western Reserve Unive		89.3
Medical College of the		79 8, 81 9, 82 4, 82 4, 82 5, 8 84 9, 84 9, 85.3, 8 [illegible] 87.6, 87.9, 88, 88, 89.3, 89.5, 89.9, 90.5, 93 8, 94 3

eharry Medical College	(1923) 78.4, (1925)	75, 81.4
niversity of Virginia Department of Medicine	(1925)	91.8
teopath		84.1

College LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
lanta Medical College	(1898), (1915)	Georgia
niversity of Georgia Medical Department	(1901)	Georgia
ennett Medical College	(1913)	N. Carolina
niversity of Maryland School of Medicine	(1922)	N. Carolina
oman's Medical College of Pennsylvania	(1919)	· Alabama
edical College of Virginia	(1924)	Virginia

Book Notices

Infections of the Hand. A Guide to the Surgical Treatment of cute and Chronic Suppurative Processes in the Fingers, Hand, and orearm. By Allen B. Kanavel, M.D., Professor of Surgery, Northestern University Medical School. Fifth edition. Cloth. Price, $5.50. . 499, with 196 illustrations. Philadelphia: Lea & Febiger, 1925.

A surgeon is not justified in treating hand infections withut a thorough and intelligent study of this book. Now in its fth edition, it represents one of the most brilliant monoraphs in surgical literature. The author makes a detailed esentation of the anatomic relationships between such ructures as tendon sheaths and bursae, fascial spaces and mphatics. By means of dissections and experimental injecons of cadaver hands, he has demonstrated the routes of tension of pus from the common foci of infection. He has osely correlated clinical signs with underlying pathologic anges by a clear diagnostic picture of each type of infection. his has resulted in the establishment of early diagnosis, rticularly in the dangerous tendon sheath infections. He ints out the importance of properly placed incisions, callated not only to provide efficient drainage, but also to void unnecessary damage to the motor mechanism of the and. There is an excellent exposition of the lymphatic nfections. The first part of the work is devoted to simple calized infections, such as felon and paronychia; the second rt to grave infections, such as tendon sheath and fascial ace infections. The anatomy of the hand and forearm is udied from a surgical standpoint, and sections of the book eal with lymphatic and allied infections, erysipelas, gas acillus infections and tuberculosis. There are also chapters n the complications and sequelae of hand infections, such as nkylosis and contracture, with a study of corrective meaures. In the chapter on after-treatment, the author makes it bvious that the control of infection must be accomplished ithout the sacrifice of function; the so-called position of nction must be maintained from the start, and in old cases ust be obtained by the use of splints. The text is profusely lustrated.

A Synopsis of Surgery. By Ernest W. Hey Groves, M.S., M.D., .Sc., Surgeon to the Bristol General Hospital. Seventh edition. Cloth. rice, $5. Pp. 671, with 162 illustrations. New York: William Wood & o., 1925.

The author, in the preface, says: "It is, of course, obvious nat the large works cannot be dispensed with; but after a tudent has carefully read through a complete textbook, he nay find this synopsis will aid his memory in retaining a ast array of facts in an orderly manner." Obviously, such synopsis may tempt the student to take the short-cut and o dispense with the larger works altogether. The book neets its aim unusually well. The introduction of drawings nd diagrams in the new edition adds considerably to the alue of the text. The information throughout is thoroughly ıp to date with one glaring exception, which is to be found n the chapter on exophthalmic goiter. To quote: "Treatnent: Bromides, digitalis and belladonna are useful. Iodin, odides are harmful. Moebius' serum, from thyroidectomized nimals, is the most active remedy. Surgical: Arterial ligaure—both superior and one inferior arteries are tied and ome improvement results. Partial thyroidectomy: Removal of the whole of one lobe and half the opposite. There is danger of death from acute thyroid intoxication." The nformation contained here is not only inadequate; it is ncorrect. The use of iodin preliminary to the operation has robbed the latter of the danger of death from intoxication. It has taken the place of polar ligation and constitutes one of the most important advances in this field. The removal of "a whole one lobe and a half of the other" would not cure many cases. It is conceded by surgeons of experience that nothing short of a radical subtotal thyroidectomy is worth while. This emphasizes once more the danger of treating surgical subjects in synopsis form.

A Synopsis of Gynaecology. By Arthur Gray, F.R.C.S., M.R.C.P., Gynaecological Surgeon, Hampstead General Hospital. Cloth. Price, $3.75 net. Pp. 352. New York: Longmans, Green & Co., 1925.

Probably the great majority of men teaching in medical schools have at some time or other prepared, each one for himself, a sheaf of notes pertaining to his particular subject. These notes usually are in typewritten form, and each compiler has no doubt looked forward to the time when expansion into a formal textbook would become feasible. This author has been the first, so far as we know, to have such notes typed with printers' ink in book form. For this volume is just that—a printed notebook. Concise to the point of incomplete sentence construction, telegraphic in its brevity, the longer paragraphs reading like night letters, the pages are packed with concrete statements, as a result of which argument becomes didacticism. As a result, further, the fundamental principles of gynecology are emphasized, its elaboration and technic merely suggested. Far from being a fault, this is a relief, when held up in comparison with the usual textbook. In its brevity of statement, the volume covers the field of gynecology in all its phases. In its classification, it is more conventional; in this respect the typical textbook is followed. To the student in training, such an exposition would be of no value; and, indeed, it is not intended for the student. In his preface, the author states that the book is primarily meant for the instructor and for use in rapid review by those preparing for higher examinations. The details of operations have been purposely omitted, the greater emphasis being placed, properly enough, on pathology.

Midwifery Mechanics. By Lieut.-Colonel Andrew Buchanan, I.M.S., M.A., M.D. Cloth. Price, $2.50. Pp. 82, with 12 illustrations. New York: Oxford University Press, 1924.

Wisdom and technical experience are exhibited in this little book. The author elaborates the theory of "pivotal points," by which he means the apex of the maternal subpubic arch and the craniovertebral junction of the child. His thesis emphasizes the necessity for recognizing before labor the presentation and the attitude of the child and the effect which the distance of the pivotal points from each other, and the ease with which they may be brought into relation, will have on the progress of labor. In the course of his argument, he finds a need for employing the term "revolution" in place of "flexion or extension" to explain the anteroposterior movement of the head on its vertebral axis. In a mechanical sense the term might carry a greater accuracy, as he contends; but, on the other hand, flexion and extension have the authority of familiarity and long usage, as well as an analogy with a similar action in other joints. Again, the term "long axis of accommodation," which the author prefers, is really no improvement in nomenclature over "Pajot's law of accommodation," with which we have long been familiar. Whatever the name, the law applies equally to the head on the pelvic floor and the child in the uterus. That the back of the babe tends to turn forward in order to accommodate its convexity to the concavity of the anterior wall of the uterus, all will agree; but that this tendency is produced by the projection of the lumbar vertebrae of the mother rather than by the physiologic flatness of the posterior wall of the organ is not so clear, unless indeed the author means that those protruding vertebrae are factors in the etiology of the flattened posterior wall. In his mechanical exposition, the author stresses the fact that if the back is in front it will result in a good vertex or a bad face position, that is, with the chin posterior; while, if the abdomen is in front, a good face or a bad vertex position will occur. In concise form he states this as his "twelve letter formula," and urges the importance of locating the position of the child's back before labor. Such accuracy of examination cannot be emphasized too much, but in practice the procedure will be executed only by specialists or deeply interested students; and surely it will be neglected, if not despised, by the surgeon, the internist, the ophthalmologist and others who practice midwifery, not obstetrics, in off hours. It is true in general, as the author says, that the physician and widwife are imperfectly trained in obstetrics. It is perhaps true that many men in teaching positions are more interested in self-exploitation than in handing down the art of obstetrics or transmitting an enthusiasm for its study. It is *undoubtedly true also* that most cases of labor are conducted without any attempt in the prenatal period to learn what problem is presented by a given pregnancy. It is for this reason that Comyns Berkeley, in his discussion of occipitoposterior positions, is justified in saying that either the physician does not recognize the complication or, if he does, is usually ignorant of the correct way to handle it. For this reason too, Dr. Buchanan cries aloud for more skill, more care, more thought and more taking of pains in the conduct of pregnancy and labor. His book will strike a sympathetic chord in the hearts of the few who are really interested in and anxious for any thoughtful consideration of the mechanics of midwifery.

Die aesthetische Erscheinungsweise der Farben. Von G. J. von Allesch. Paper. Price 12 marks. Pp. 157. Berlin: Julius Springer, 1925.

This work appears to be based on a series of painstaking experiments carried on over a considerable period for the purpose of achieving something like a standardization of the emotional reactions caused by color and color combinations. The main difficulty encountered is the proper recording of these reactions. The persons used for the observations must record their impressions by describing them in words. The describing of the emotional experience of several listeners to a certain composition in music would be radically different. Compared with the presentation of formless colors, the description of a person's reaction to a musical composition would be definite. As a matter of fact, the divergence of reaction to colors as recorded in these experiments is so various and contradictory as to become practically meaningless from a scientific point of view. The esthetic conclusions that might be based on these observations would not be sufficiently well founded for the guidance of a producing artist. There may be some interest in applying the conceptions gained to the historical survey of the art of colors. The actual value of these experiments seems at this point of development in doubt.

Orthopädische Therapie. Bearbeitet von Prof. Dr. Hermann Gocht, Direktor, und Dr. Hans Debrunner, bisher Oberarzt der orthopädischen Universitatsklinik, Berlin. Paper. Price, 22 marks. Pp. 340, with 279 illustrations. Leipsic: F. C. W. Vogel, 1925.

This monograph deals exclusively with the treatment of orthopedic conditions. In large textbooks, methods of treatment are described at length seriatim, and the reader is left to determine which method of treatment should be instituted. This treatise attempts to assist the beginner by presenting only those methods which are in use and which have stood the test of time; in each chapter a scheme of treatment is given in detail. Conditions presenting similar pathologic findings and causes are grouped together. The authors believe that in this manner the therapeutic indications will be more easily understood. Among the topics discussed in the book are systemic diseases of the skeleton; inflammatory diseases of the bones and joints; deformities of the neck, vertebral column and pelvis; deformities of the long bones; deformities of the joints; paralyses due to diseases of the muscular apparatus, and diseases of the soft parts of the motor apparatus. The illustrations showing operative procedure were, almost without exception, sketched at the operating table, the salient points being particularly emphasized. In order properly to bring out the important facts, most of the illustrations are entirely new. The book shows great thought and care in its preparation and is a real addition to orthopedic literature. It can be warmly recommended.

Medicolegal

Action for Performing Unnecessary Operation

(White v. Hirshfield (Okla.), 236 Pac. R. 406)

The Supreme Court of Oklahoma, in reversing a judgment rendered for the defendant physician, says that the plaintiff alleged that, in addition to delivering her of a child by Cesarean section, the defendant, without her consent, performed on her the unnecessary operation of tying or removing the fallopian tubes. The question presented to the supreme court was whether the plaintiff's right of action was barred by the statute of limitations of Oklahoma, which requires an action for assault and battery to be commenced within one year; and it is held that it was not. It is held that, in an action for damages brought by a patient against a physician and surgeon for performing an unnecessary operation on the plaintiff, such operation being without the consent of the plaintiff, the plaintiff may waive the right of action for technical assault and battery and bring an action for injury to his person by reason of such acts constituting malpractice and a violation of duty as between the physician and the patient, and in such case the statute of limitations which fixes two years as the time in which an action for an injury to a person may be brought is applicable, and not the limitation of one year fixed by the statute for actions for assault and battery.

The supreme court is of the opinion that when a patient is under the care, treatment and control of a physician, and when an unnecessary operation is performed without the consent of such patient, the elements of technical assault and battery include malpractice and a violated duty on the part of the physician to his patient, and when an injury results to the patient, that such patient may waive the action for technical assault and battery and rely on his right to recover damages by reason of the wrongful and unskilful acts of the physician, which constitute a violated duty on his part. It would be unreasonable to say that because of the act on the part of the physician in performing an unnecessary operation without the consent of the patient, the elements of malpractice, wrongful acts, and a violated duty were not present and concurrent by reason of the acts of such physician; and while it may be true that such acts may constitute technical assault and battery, yet the injured patient may waive his right to proceed in an action for assault and battery and bring an action for the wrongful and unskilful acts of the physician, such acts constituting a violated duty on the part of the physician and the consequent injury to the patient, in which case the statute requiring an action for assault and battery to be brought within one year after its accruement is inapplicable.

Physician and Abortion When Fetus Has Lost Vitality

(Commonwealth v. Nason et al. (Mass.), 148 N. E. R. 110)

The Supreme Judicial Court of Massachusetts, in overruling the exceptions of the defendants who were convicted of using a rubber tube on the body of a woman with intent to procure a miscarriage, says that the defendants were husband and wife, and that the commonwealth introduced testimony tending to show that after the woman was brought to their house, the defendant wife, with the sanction and approval of her husband, inserted a rubber tube into the body of the woman and performed certain other operations on her, as a result of which a few days later the woman was delivered of a child about three months and two weeks advanced from conception.

A request that the jury should be instructed that an indictment for producing a miscarriage could not be maintained if the fetus had previous to the acts complained of lost its vitality, so that it could never have matured into a living child, was rightly refused. The offense created by the Massachusetts statute (General Laws, Chapter 272, Section 19) is complete when a defendant unlawfully uses an instrument on the body of a woman with intent to procure her miscarriage, and it is entirely immaterial that the fetus previous to the act complained of has lost its vitality, so that it never could have matured into a living child. Likewise, a requested instruction was rightly refused, which told the jury that if it found from the evidence that at the time the woman came to the defendants the fetus which she was carrying had already from the treatment administered by herself or one Duffy become dead and decayed, and that whatever the defendants did was merely to try to remove the remains of the dead fetus for the purpose of relieving the woman, the defendants could not be convicted. In regard to the contention of the defendants, suggested by the latter instruction, the judge instructed the jury:

"But they say, in addition, if these things were done there, if some of the things testified by the complainant and witnesses here or by the prosecutions were done, there is another view of them that takes them outside this statute, and there were no unlawful means employed to do what was done, and, therefore, no existing intent to commit any crime, and they respond to this action or indictment by the statement that one of the defendants is a physician, and what was done there was done on his judgment. Now then, a physician has a right to commit an abortion and, if it is done on the best judgment of that doctor and if his judgment corresponds with the average judgment of the doctors in the community in which he practices, it can cease to be illegal and becomes legal; just as legal as if he were delivering a woman with forceps five days before the period of gestation. If that defense is true, it is a complete defense if they both have acted under it. If he gave the advice and the woman defendant was acting under this advice, she is justified; but if he was giving advice that she did not know of and was taking on her own enterprise and undertaking to do something whereby she was not covered by a physician's advice, she cannot justify unless she was acting under his instructions."

This was sufficiently full and accurate to protect the rights of the defendants.

Contract to Withhold Information About Mistake

(Maryland Casualty Co. v. Fidelity & Casualty Co. (Calif.), 236 Pac. R. 210)

The District Court of Appeal of California, First District, Division 1, says that the plaintiff was, under a workmen's compensation policy, the insurance carrier of a company, one of whose employees in the course of his employment met with an accident through which he was ruptured, after which he was at the plaintiff's expense taken to a hospital for treatment. During the treatment an employee of the hospital, in the performance of his duties, delivered to a surgeon attending the injured man a preparation to be injected hypodermically. Through the negligence of the attendant, a different substance was substituted for that which should have been used, in consequence whereof the injection caused pain and suffering and aggravated the injury, delaying recovery and causing an additional expense of $1,000. The hospital carried an indemnity policy of insurance against liability for negligence of its employees, issued by the defendant. Both the plaintiff and the defendant knew of the mistake which had been made, and that in consequence thereof delay would result in the injured man's recovery. He knew nothing whatever concerning the matter. The defendant thereupon stated to the plaintiff that, if it would not inform the patient of the injurious effects of the injection of the wrong preparation, and if it would pay the sum by which the expenses of the treatment had been increased in the hospital, the defendant would reimburse the plaintiff for such additional outlay. The plaintiff agreed to this, and, after it had made payment to the injured employee of all moneys due from it as the insurance carrier of the employer, it paid the further sum of $1,000 in settlement of the additional expense arising as stated above. It was on this promise of reimbursement by the defendant that the complaint in the plaintiff's suit for $1,000 was predicated. A demurrer to the complaint was sustained on the ground that the contract was against public policy and good morals and therefore unenforceable; but the judgment rendered for the defendant is reversed by the district court of appeal, it seeming clear to it that there was nothing in the agreement here involved that in any manner condemned it, and that the plaintiff, having parted with its money in reliance thereon, was entitled to recover such amount.

The plaintiff had agreed at the request of the defendant to advance a sum for which the latter was solely responsible, on the understanding that the injured employee should be kept in ignorance of the arrangement. This understanding in no manner affected the patient's rights, and this court fails to see how vice was imported into the transaction by reason thereof, or how the arrangement was in any manner controlled or affected by public policy. The mere agreement of the parties not to disclose their arrangement to the injured employee in no manner encouraged a relaxed responsibility or a lessening of the care and watchfulness due to him, contrary to the interests of society, which would justify its denouncement. The plaintiff owed no duty to the employee to divulge to him the fact that his recovery had been delayed through carelessness. That was a matter between the patient and the institution employed to care for him, but which did not concern the plaintiff. No confidential relation of any kind was breached. Moreover, to render a promise of the character here involved illegal, it must have been for the sake of gain. Hearing denied by the Supreme Court of California.

May Testify After Making Examination for Attorney

(Leard v. State (Okla.), 235 Pac. R. 243)

The Criminal Court of Appeals of Oklahoma says that some four days after the offense charged in the information (the commission of rape) the county attorney had a physician make a physical examination of the prosecuting witness. The physician was not called as a witness by the state, but was offered as a witness for defendant Leard, and objection was made to the physician's testimony as being privileged. Section 589 of the Compiled Laws of Oklahoma of 1921 provides that:

> The following persons shall be incompetent to testify: . . . A physician or surgeon, concerning any communication made to him by his patient with reference to any physical or supposed physical disease, or any knowledge obtained by a personal examination of any such patient. . . .

The defendant, however, contended that the relation of physician and patient did not obtain in this case, for the reason that it was shown that the county attorney was present at the examination, and the physician was called by the county attorney. The court believes that the contention was well taken that the witness was competent and should have been permitted to testify. As expressed in the syllabus prepared by the court: A physician who makes an examination of a person at the direction of a prosecuting attorney, if he does not assume to act as a physician for such person, and is not called or employed as a physician by or for the person examined, is a competent witness to testify regarding the information gained in such examination.

Society Proceedings

COMING MEETINGS

American Pharmacological Society, Cleveland, Dec. 28-31. Dr. E. D. Brown, University of Minnesota, Minneapolis, Minn., Secretary.

American Physiological Society, Cleveland, Dec. 29-31. Dr. W. J. Meek, Science Hall, Madison, Wis.

American Society for Experimental Pathology, Cleveland, Dec. 28-30. Dr. E. B. Krumbhaar, Philadelphia General Hospital, Philadelphia, Sec'y.

American Society of Biological Chemistry, Cleveland, Dec. 28-30. Dr. D. W. Wilson, University of Pennsylvania School of Medicine, Philadelphia, Secretary.

Federation of American Societies for Experimental Biology, Cleveland, Dec. 29-31. Dr. Walter J. Meek, Science Hall, Madison, Wis., Sec'y.

Isthmian Canal Zone, Medical Association of, Ancon, Jan. 19. Dr. David L. Robeson, Ancon Hospital, Ancon, Secretary.

Sioux Valley Medical Association, Sioux City, Iowa, Jan. 19-20. Dr. R. F. Bellaire, Trimble Block, Sioux City, Secretary.

Society of American Bacteriologists, Madison, Wis., Dec. 29-31. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to The Journal for a period of three days No foreign journals are available prior to 1920, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

30: 603-752 (Nov.) 1925

- *Etiology of Chronic Intestinal Indigestion. A. Brown, A. M. Courtney. G. A. Davis and I. F. MacLachlan, Toronto.—p. 603.
- *Tetany as Cause of Convulsions in Whooping Cough. G. F. Powers, New Haven, Conn.—p. 632.
- *Frequent Cause of Dyspepsia in Breast Fed Infants. K. U. Toverud, Oslo, Norway.—p. 642.
- *Inorganic Phosphorus in Blood of New-Born. Seasonal Variation and Relation to Rickets. E. A. Riesenfeld, I. Handelman and A. R. Rose, New York.—p. 646.
- *Intraperitoneal Transfusion of Citrated Blood. J. M. Sansby, St. Paul.—p. 659.
- *Urobilin Excretion in Children with Anemia. K. Merritt, New York.—p. 667.
- *Extreme Leukocytoses in Pertussis. R. P. Seitz, San Francisco.—p. 670.
- *Carbohydrate Metabolism of Normal Infant. F. F. Tisdall, T. G. H. Drake, and A. Brown, Toronto.—p. 675.
- *Craniotabes. C. U. Moore and H. G. Dennis, Portland, Ore.—p. 683.
- *Gummatous Osteoperiostitis of Skull in Congenital Syphilis; Two Cases. E. C. Dunham, New Haven, Conn.—p. 690.
- Literature on Infant Feeding for 1924. R. D. Moffett, New York.—p. 700.

Etiology of Chronic Intestinal Indigestion.—That a predominantly gram-positive aciduric intestinal flora of *B. bifidus* type is characteristic of chronic intestinal indigestion has been confirmed by Brown et al. That proteolytic activities are concerned in the production of the symptoms of chronic intestinal indigestion is indicated by the abnormally high ammonia content of the feces. A highly proteolytic spore bearing bacillus, isolated from the stools in two cases of chronic intestinal indigestion, has been found to be capable of extreme changes in the nature of its metabolic activities (in milk). "Bacillus A" forms, which constitute the predominant organisms of the typical flora in chronic intestinal indigestion are also variable in their metabolic behavior (in milk), though when cultured alone they are not usually strongly proteolytic. Some support is given by this work to the theory that a transformation of one to the other of *B. bifidus*, "Bacillus A" forms and a spore bearing bacillus, such as Noguchi brought about experimentally, may take place in the intestinal tract under some circumstances. Feeding experiments with white rats showed that they did not gain normally while being fed milk cultures of the beforementioned spore bearing bacillus but resumed the normal rate of gain as soon as the diet was changed. Cultures of the other organisms did not interfere with normal growth. Acidified milk and culturing with *Streptococcus lacticus* inhibited the growth depressing effect of one spore. *Streptococcus lacticus* (*Micrococcus ovalis*), the organism used in the preparation of the lactic acid and protein milk, which forms a part of the special high protein diets used in the treatment of chronic intestinal indigestion, established itself as the predominant organism of the feces soon after its infection has been begun. However, it probably takes a long time for it to oust completely the offending flora, which perhaps persists in a spore form. *Streptococcus lacticus* was very active metabolically in casein enriched low sugar milk and formed no harmful products.

Tetany Cause of Convulsions in Pertussis.—Powers calls attention to the fact that infantile tetany, and not anatomic injuries or an unknown toxin, is often the cause of the convulsions in whooping cough. Electrical hyperirritability of the nerves and a reduced calcium concentration of the blood serum may be the only means of recognizing the existence of tetany. A recognition of the rôle of tetany in this connection is important, that appropriate therapy for preventive as well as for curative purposes may be instituted.

Partial Inanition Cause of Dyspepsia in Breast Fed Infants.—In Toverud's experience, overfeeding with breast milk is a rare cause of dyspepsia. Partial inanition, however, is a frequent cause. The symptoms of inanition may vary widely. There may be merely weakness, constipation and weight loss, or there may be diarrhea, vomiting and irritability. The mechanism by which inanition causes the symptoms of dyspepsia is discussed.

Phosphorus in Blood of New-Born.—Reisenfeld et al. made 1,439 inorganic phosphorus determinations on the blood of mothers and their new-born infants. The inorganic phosphorus of the blood of the new-born infant was not affected by the previous habitat of the mother (that is, in the tropics or temperate zone). The time the mother spent out of doors during gestation showed no influence whatever on the inorganic phosphorus of the infants' blood. The diet of the mother was one of the controlling factors of the inorganic phosphorus content of the blood of the new-born infants. A definite seasonal variation of inorganic phosphorus was noted, which is in harmony with the recognized seasonal incidence of rickets. The curves of available sunlight hours and inorganic phosphorus of the new-born infant are parallel in the latter half of the year, the points of resemblance in the sunlight curve preceding that of the inorganic phosphorus curve by one month. The curve representing relative humidity, a hitherto uncorrelated factor, when compared with the inorganic phosphorus curve of the new-born infant, shows a striking parallelism throughout the year, the points of resemblance preceding the latter by two months. The close relation between relative humidity and the inorganic phosphorus content of the new-born infant's blood is explained as an accentuation of the effects of the ultraviolet rays by removing minute particles which act as a ray filter from the atmosphere.

Intraperitoneal Transfusion of Citrated Blood.—The effect of an intraperitoneally produced plethora of citrated blood on the hematopoietic activity of the bone marrow was studied by Sansby. It was found to have an inhibitory effect similar in nature to that produced when the citrated blood was introduced by the intravenous route. This substantiates further the viability of the red blood cells introduced by intraperitoneal transfusion.

Urobilin Excretion in Anemic Children.—From the series of cases studied by Merritt, in which the urobilin values are markedly lower than in the series of Bass, Denzer and Herman, it does not seem that the estimation of urobilin in children is as valuable a method as it is in adults, since there is often no marked increase when the clinical picture and blood findings would make the presence of blood destruction probable. There is little consistency either in the type of anemia or in the age of the child, as to the urobilin findings.

Leukocytosis in Pertussis.—Seitz reports two cases of pertussis with unusually high leukocyte counts. In one case the highest number was 192,000 per cubic centimeter; polymorphonuclears, 28 per cent.; lymphocytes, 61 per cent. In the other case, the peak was 162,500 leukocytes; 24 per cent. polymorphonuclears and 74 per cent. lymphocytes.

Carbohydrate Metabolism of Normal Infant.—From a review of the literature and their own results, Tisdall, Drake and Brown conclude that the average fasting blood sugar concentration in normal infants usually does not vary more than from 0.075 to 0.095 per cent. In the sixty-eight cases reported, the average value was 0.085 per cent.

Craniotabes Is Rachitic Manifestation.—Among 193 infants under 1 year of age, Moore and Dennis found cranial softening in 62 per cent. These cases indicated that craniotabes is rachitic.

Gummatous Osteoperiostitis of Skull.—In a series of 100 cases of congenital syphilis analyzed by Dunham, two children have presented themselves with gummatous osteoperiostitis of the skull, in addition to other lesions of congenital syphilis. The bones and skin were involved without evidence of involvement of the brain or meninges. The lesions healed rapidly under general antisyphilitic treatment.

American Journal of Anatomy, Philadelphia

36: 185-393 (Nov.) 1925

Origin of Germ Cells in Trionyx. C. S. Simkins, Memphis, Tenn.—p. 185.
Mitochondrial Elements of Spinal Ganglion Cells of Beriberi Fowls. Wen-Chao Ma, Peking, China.—p. 215.
Lineal Growth of Respiratory System During Fetal and Neonatal Life as Expressed by Graphic Analysis and Empirical Formulae. G. J. Noback, New York.—p. 235.
*Hereditary Abnormalities of Viscera; Kidneys, in Descendants of Roentgen-Rayed Mice. H. J. Bagg, New York.—p. 275.
Order, Time and Rate of Ossification of Albino Rat (Mus Norvegicus Albinus) Skeleton. R. M. Strong, Chicago.—p. 313.
Musculature of Human Colon: Taeniae. P. E. Lineback, Atlanta, Ga. —p. 357.
Effect of Different Hydrogen-Ion Concentrations on Mitochondria in Liver Cell. J. T. Scott, Denver.—p. 385.

Hereditary Abnormalities of Viscera.—The inherited abnormalities of the viscera have been noted by Bagg in the descendants of a group of mice treated with comparatively light doses of unfiltered roentgen rays on five consecutive days. The visceral abnormalities are mainly defects of the kidney, which may vary from a partial, to a nearly complete atrophy of one kidney, to the congenital solitary kidney condition, and to complete absence of both kidneys. The right or left kidney may be affected with equal frequency, and there is apparently no sex difference in this respect. Animals with the congenital absence of both kidneys are born alive and are apparently of average weight and development in other respects. They live for about twenty-four hours. Blindness and various defects of the limbs, syndactylism, polydactylism, and especially club feet, are closely associated with abnormalities of the kidneys. One instance of situs inversus viscerum has been noted. Embryologic studies of young from strains with a high incidence of visceral abnormalities have shown that these defects are associated with blood extravasations, especially in the liver and testes, which are similar to those extravasations closely associated with the production of blindness and club feet. Selection has greatly increased the number of animals with visceral abnormalities in the experimental lines. The visceral defects are definitely inherited, are recessive to the normal, and when considered as one of the manifestations of a general tendency to abnormal structure, they approach the mendelian expectation in behavior.

American Journal of Ophthalmology, Chicago

8: 849-928 (Nov.) 1925

Nonoperative and Operative Treatment of Glaucoma. F. P. Calhoun, Atlanta, Ga.—p. 849.
Gonorrheal Ophthalmia Treated with Acriflavine; Activation of Bactericidal Action of This Dye. W. B. Wherry, Cincinnati.—p. 858.
Inflammation of Cornea Caused by Silver Nitrate Solution. J. Fejer, Budapest, Hungary.—p. 863.
Melanosis Oculi. A. B. Reese, New York.—p. 865.
Posterior Chamber Cysts of Iris. J. H. Roth and C. W. Geiger, Kankakee, Ill.—p. 870.
Hyperphoria as Factor in Eyestrain. F. E. Woodruff, St. Louis.—p. 874.
Bilateral Papillitis Associated with Accessory Nasal Sinus Disease and Nephritis. C. W. Tooker, St. Louis.—p. 878.
Exophthalmos; Complication of Nasal Sinusitis. C. F. Yerger, Chicago. —p. 882.
Babbit Metal in Lens Without Lenticular Opacity. D. J. Lyle, Cincinnati.—p. 887.
Binocular Vision After Unilateral Traumatic Aphakia. J. J. Horton, Eagle Pass, Texas.—p. 888.
Puzzling Extra-Ocular Muscle Palsy. W. S. Reese, Philadelphia.—p. 889.

American Journal of Public Health, Albany, N. Y.

15: 943-1040 (Nov.) 1925

Present Status of Influenza Problem. E. O. Jordan, Chicago.—p. 943.
Evolutionary Changes in Seasonal Curve of Birth Rate. L. J. Reed, Baltimore.—p. 948.
Significance of Bacteriophage in Surface Water. L. Arnold, Chicago.—p. 950.
Chemistry of Proteins: Relation to Nutrition. D. B. Jones, Washington, D. C.—p. 953.
Engineering Aspects of Pasteurization. E. B. Phelps, New York.—p. 958.
Value of Health Department Reports. I. V. Hiscock, New Haven, Conn. —p. 963.
Morbidity Statistics. E. H. Lewinski-Corwin, New York.—p. 967.
School Health Examinations. C. E. Buck, Detroit.—p. 972.
Unification of Milk Control in United States. L. C. Frank, Mobile, Ala. —p. 977.
Point of View of City Health Officer. A. O. Peters, Dayton, Ohio.—p. 980.
Relation of Public Health Workers to Industrial Hygiene. J. W. S. McCullough, Toronto, Ont.—p. 984.
Suggestions for Securing Information on Accidental Deaths. S. J. Williams, Chicago.—p. 986.
Survey of Eighty-Six Cities. H. Emerson, New York.—p. 988.

Archives of Otolaryngology, Chicago

2: 417-528 (Nov.) 1925

*Statistical Studies of Children in Chicago Public Schools for Deaf. G. E. Shambaugh, A. K. Hall, E. W. Hagens and J. W. Holderman, Chicago.—p. 417.
Esophageal Findings. C. J. Imperatori, New York.—p. 441.
*Management of Infections of Sigmoid Sinus. O. J. Dixon, Kansas City, Mo.—p. 453.
New Esophagoscope for Flat Foreign Body. H. Kosokabe, Sapporo, Japan.—p. 458.
Present Status of Our Knowledge of Allergy in Its Relationship to Otolaryngology. W. W. Duke, Kansas City, Mo.—p. 460.

Deaf Children.—Exactly one half of the children examined (290) by Shambaugh et al. were found to be congenitally deaf, while the other half had acquired ear trouble. Total deafness existed in 57.9 per cent. of the cases of congenital deafness and in 35.2 per cent. of the cases of acquired deafness. Partial deafness was found in 42.1 per cent. of the cases of congenital deafness and in 64.8 per cent. of the cases of acquired deafness. Vestibular responses were present in 75.1 per cent. of the cases of congenital deafness and in 62.07 per cent. of the cases of acquired deafness. Vestibular responses were absent in 24.9 per cent. of the cases of congenital deafness and in 37.93 per cent. of the cases of acquired deafness. A total absence of vestibular responses and total deafness were found in 17.5 per cent. of the cases of congenital deafness and in 26.2 per cent. of the cases of acquired deafness. Presence of vestibular responses and total deafness were found in 40 per cent. of the cases of congenital deafness and in 8.2 per cent. of the cases of acquired deafness. Absence of vestibular responses and partial deafness were found in 6.2 per cent. of the cases of congenital deafness and in 11.03 per cent. of the cases of acquired deafness. Presence of vestibular responses and partial deafness were found in 34.5 per cent. of the cases of congenital deafness and in 53.8 per cent. of the cases of acquired deafness.

Treatment of Infected Sigmoid Sinus.—Dixon has departed from the radical opening of the sinus, and even when the clinical findings are an infected thrombus with chills, sharp temperature fluctuations, leukocytosis, sweats, etc., he has limited the surgery to uncovering the vessel thoroughly until the normal sinus is reached, inserting a short gauze wick drain—not a pack—and leaving the wound wide open. Cases in which a thrombus has developed following an accidental tear of the sinus and late extremely septic cases are obvious exceptions. If the septic symptoms continue beyond forty-eight postoperative hours, then, without any anesthetic whatever, the exposed sinus can be thoroughly opened and drained. This two stage procedure, when necessary, also has the advantage of reducing the virulence of organisms within the mastoid process.

Boston Medical and Surgical Journal

193: 899-946 (Nov. 12) 1925

Traditions of Medicine in Rhode Island. J. W. Keefe, Springfield.—p. 899.
Duodenal Ulcer; Pyonephrosis. F. Cobb, Boston.—p. 905.
Case of Retroperitoneal Cyst. J. D. Barney, Boston.—p. 908.
Fracture Committee of American College of Surgeons. C. L. Scudder, Boston.—p. 911.
*Morbidity and Mortality of Diphtheria. D. M. Lewis, New Haven, Conn.—p. 913.

193: 947-996 (Nov. 19) 1925

Handbook for Health Examinations by Physicians. J. Garland, Boston. —p. 947.
*Obstruction of Common Duct Among 1,000 Operations on Gallbladder and Bile Ducts. P. Truesdale, Fall River, Mass.—p. 968.

Relation of Measles to Diphtheria.—Lewis contends that measles frequencies are followed by increase of diphtheria cases. An increased morbidity from diphtheria occurs through the production of a tide of nasal carriers, and the isolation of these as well as of the avirulent nasal carriers during measles prevalence produces decreased morbidity of diphtheria. Diphtheria mortality would seem dependent in the main on measles epidemics for its excesses and variations. There would seem to be a factor bound up in measles operating later in time or even independently at occasional periods. Lewis is of the opinion that the same streptococcal complications as kill in measles, bronchopneumonia, etc., may likewise later take a similar toll from diphtheria. The important point to be established is that such streptococcal manifestations are not simulators as well as complicators. If they are never primary invaders and can gain their virulence only through their action as complicators, the theory of laboratory control by specific vaccination may control specific diseases.

Obstruction of Common Duct.—Seventy-five cases of common duct obstruction occurred among the 1,000 cases reviewed by Truesdale. The cause of obstruction in thirty-seven was stone; in twenty-eight it was pancreatitis, almost equally divided between the acute hemorrhagic and chronic types; in six it was cancer of the pancreas, and in four cases, the obstruction was due to traumatic cicatrization of the duct. Among the cases of stone in the common duct there were four deaths, representing an operative mortality of 11 per cent.

California and Western Medicine, San Francisco

23: 1409-1520 (Nov.) 1925

Essentials of Medical Education. W. E. Musgrave, San Francisco.—p. 1409.
California's League for Conservation of Public Health. W. I. Terry, San Francisco.—p. 1419.
Medical Profession and Medical Officers' Reserve Corps. W. E. Musgrave, San Francisco.—p. 1424.
Public Health Aspects of Poliomyelitis. G. E. Ebright, San Francisco. —p. 1428.
Anterior Poliomyelitis; Orthopedic Problem. L. W. Ely, San Francisco. —p. 1429.
Torticollis. W. A. Clark, Pasadena.—p. 1429.
Roentgen-Ray Therapy Installations in California. W. E. Chamberlain and R. R. Newell, San Francisco.—p. 1433.
Gastric Motor Disturbances and Visualization of Appendix. R. C. Shawhan, Los Angeles.—p. 1434.
Roentgen-Ray Diagnosis of Kidney Tumors. M. Brown, Ogden, Utah. —p. 1435.
Suprasymphyseal Cervical Cesarean Section; Fourteen Cases. J. Vruwink, Los Angeles.—p. 1437.
Treatment of Morbid Fear. S. D. Ingham, Los Angeles.—p. 1441.
Mucocele of Frontal Sinus Caused by Osteoma. J. A. Bacher, San Francisco.—p. 1444.
Blood Transfusion. G. H. Juilly, San Francisco.—p. 1445.

Iowa State Medical Society Journal, Des Moines

15: 573-628 (Nov.) 1925

*Acute Poliomyelitis Treated with Rosenow's Serum. H. R. Sugg, Clinton.—p. 573.
Rabies; Fatal Case After Pasteur Treatment. T. A. Moran, Melrose.—p. 577.
Massage and Movements in Treatment of Fractures. W. Darrach, New York.—p. 582.
Interpretation of Cough Symptom. F. J. Kalteyer, Philadelphia.—p. 585.
Relationship of Chronic Infection of Gallbladder to Disease of Cardiovascular System. F. A. Willius and J. M. Fitzpatrick, Rochester, Minn.—p. 589.
Intracapsular Extraction of Cataract by Barraquer Method. O. Wolfe, Marshalltown.—p. 592.
High Myopia as Degenerative Process. H. J. McCoy, Des Moines.—p. 597.
Treatment for Fistula Following Dacryocystectomy. S. G. Hands, Davenport.—p. 598.
Rectal Examinations in Obstetrics. C. Coldren, Milford.—p. 600.
History and Origin of Syphilis. R. E. Jameson, Davenport.—p. 606.

Rosenow's Serum in Acute Poliomyelitis.—Sugg does not draw any conclusions from his observations in thirty-seven cases. He merely presents what happened in tabular form as a contribution based on clinical experience, in order that those interested may make their own deductions.

Kansas Medical Society Journal, Topeka

25: 357-394 (Nov.) 1925

*Practical Points in Treatment of Intestinal Obstruction. T. G. Orr and R. L. Haden, Kansas City.—p. 357.
Glucose in Vomiting of Pregnancy. W. H. Weidling, Topeka.—p. 359.
Differential Count in Acute Surgical Infections. A. J. Hinkleman, Oklahoma City.—p. 363.
Criminal from Standpoint of Physician. M. S. Gregory, Dighton.—p. 365.
Alkalosis in Pernicious Vomiting of Pregnancy; Case. H. E. Marchbanks, Pittsburgh.—p. 371.

Treatment of Intestinal Obstruction.—The following suggestions are made by Orr and Haden for the treatment of acute intestinal obstruction: (1) In the very toxic patients at least 1 gm. of sodium chlorid per kilogram of body weight (1 gm. for each 2.2 pounds) should be given as an initial dose. This is best given in 2 or 3 per cent. solution subcutaneously and 5 per cent. intravenously. With both methods the solutions should be given slowly. (2) In the severely toxic and dehydrated cases, treatment with salt solution should always be given before operation and continued immediately after operation. At least five liters of water should be given with the salt in the first twenty-four hours. (3) As a general guide to the treatment of intestinal obstruction, the *five factors to be remembered are, the mechanical obstruction,* dehydration, starvation, toxemia and drainage of the obstructed bowel.

Michigan State Medical Society Journal, Grand Rapids

24: 567-640 (Nov.) 1925

Problems Relating to Liver and Biliary Ducts. G. W. Crile, Cleveland. —p. 567.
History and Examination of Patient. I. From Medical Point of View. R. S. Morris, Cincinnati.—p. 571.
Id. II. From Surgical Point of View. C. L. Starr, Toronto, Ont.—p. 574.
Id. III. *From Ophthalmologic and Otolaryngologic Point of View.* J. A. Stucky, Lexington, Ky.—p. 578.
Id. IV. From Pediatric Viewpoint. I. A. Abt, Chicago.—p. 580.
Id. V. From Public Health Viewpoint. H. F. Helmholz, Rochester, Minn.—p. 585.
Cysts of Pancreas; Case. H. Vandeventer, Ispheming.—p. 586.
*Treatment for Asthma and Related Anaphylactic Diseases. G. L. Waldbott, Detroit.—p. 588.
Hemorrhoids. E. G Martin, Detroit.—p. 593.
Ocular Changes in Renal Disease. R. J. Sisson, Detroit.—p. 594.
Rupture of Gallbladder. C. Georg, Jr., Ann Arbor.—p. 595.
Staphylococcus Meningitis Limited to Spinal Canal; Puncture of Cisterna Magna. F. W. Garber, Jr., Muskegon.—p. 597.
Activating Factors in Pulmonary Tuberculosis. R. S. Berghoff, Chicago. —p. 599.
"Those Good Old Times," as Seen by *Physician.* J. G. R. *Manwaring,* Flint.—p. 603.
Case of Shoe Dye Poisoning. S. A. Sheldon, Saginaw.—p. 610.

Roentgen-Ray Irradiation over Spleen in Anaphylactic Diseases.—Waldbott believes that his results in ten cases are sufficiently conclusive evidence to warrant further investigation into the value of roentgen-ray irradiation over the spleen in anaphylactic diseases. It is believed that with this method a cure can be facilitated by stimulation of the function of the spleen which is greatly involved in the production of antibody. In order to interpret any results from this treatment, it is essential that the diagnosis of anaphylactic asthma must be definitely established, since other types of "asthma," i. e., thymus enlargement or chronic bronchitis, cannot be expected to be benefited.

Minnesota Medicine, St. Paul

8: 653-706 (Nov.) 1925

Lowering of Mortality in Treatment of Toxic Adenoma of Thyroid. T. L. Chapman, Duluth.—p. 653.
Diagnosis of Rickets; Conditions Simulating This Disease. W. H. Cole, St. Paul.—p. 655.
Errors in Cardiac Diagnosis. M. H. Nathanson, Minneapolis.—p. 661.
*Acute Arteriomesenteric Ileus. E. M. McLaughlin, Winona.—p. 670.
*Skin Diphtheria. A. Friedel, Minneapolis.—p. 671.
Acute Pancreatitis. R. R. Cranmer, Minneapolis.—p. 675.
Splenectomy for Hemolytic Jaundice: Case. A. E. Wilcox, Minneapolis. —p. 682.
Tumors of Testis. F. C. Schuldt, St. Paul.—p. 686.

Acute Arteriomesenteric Ileus.—McLaughlin is of the opinion that acute arteriomesenteric ileus may be a more frequent cause of postoperative vomiting than is generally supposed. He reports two cases—an appendectomy and a cholecystectomy—in which this complication occurred. The treatment consists in elevating the foot of the bed and gastric lavage.

Skin Diphtheria.—Friedel is convinced that skin diphtheria would be found more often if cultures were taken from slow healing wounds. He reports two cases in each of which a finger was the seat of the infection. In one of the cases the knee and dorsum of the foot were also affected. In this case, treatment consisted in removing the necrotic tissue with a sterile applicator and applying 10 per cent. silver nitrate once a day.

Missouri State Medical Association Journal, St. Louis

22: 417-450 (Nov.) 1925

*Traumatic Fractures of Vertebral Column. S. Moore, St. Louis.—p. 417.
*Tooth Destruction in Pregnant Woman and How to Control It. W. Kerwin, St Louis.—p. 422.
Steinman Pin Traction for Fracture of Leg. W. Rainey, St. Louis.—p. 425
Nontuberculous Hip of Early Life. J. A. Key, St. Louis.—p. 429.
Frequency of Insulin Dosage and Increased Threshold. H. E. Marchbanks Pittsburg, Kan.—p. 434.

Traumatic Fracture of Vertebral Column.—Experience has convinced Moore that traumatic fractures of the vertebral column unaccompanied by cord or nerve symptoms are very frequently unrecognized until accidentally discovered in the course of a roentgen-ray examination made on account of pain and stiffness of the back, or pain referred to some other part of the body. Limitation of motion or stress bearing capacity of any vertebra affects the entire column. Spinal rigidity or weakness is a major disability increasing in importance as descent in the social scale occurs. Accurate, early roentgen-ray diagnosis of questionable cases is essential, since the results are so disastrous if correct treatment is omitted.

Tooth Destruction in Pregnancy.—Kerwin urges that all necessary dentistry during pregnancy should be done regardless of the duration of pregnancy. The aim at tooth preservation is one of the obstetrician's duties. Better teeth can be given to the new-born by proper prenatal care. Pregnant women should use frequently an alkaline mouth wash and take calcium throughout the pregnancy.

Nebraska State Medical Journal, Norfolk

10: 409-452 (Nov.) 1925

Ductless Gland Disorders. W. Engelbach, St Louis.—p. 409.
Anuria. W A. Myers, Kansas City, Mo—p. 415.
Colitis. A Sachs, Omaha.—p. 419.
Blindness Which Could Have Been Prevented. J. M. Patton, Omaha.—p 426.
*Malignant Degeneration of Parotid Cell Nest in External Auditory Canal. A. F. Tyler, Omaha.—p. 431.
Treatment of Infantile Paralysis H. W. Orr, Lincoln.—p. 434.
Reconstructive Surgery. C. C. Johnson, Lincoln.—p. 435.
Acute Retrobulbar Optic Neuritis of Paranasal Sinus Origin. W. A. Cassidy, Omaha.—p. 439.
Management of Hypertension. G. P. Pratt, Omaha.—p. 440.
*Hemophilia; Two Cases. M. G. Wohl, Omaha.—p. 442.

Cylindroma of External Auditory Canal.—Tyler reports a case of cylindroma of the external auditory canal which contained microscopic evidence of parotid tissue. The microscopic findings support the theory that the mucoid material found in cylindromas is really a secretion of the cells making up the parenchyma of the tumor rather than the result of hyaline degeneration as advocated by some. The presence of parotid cells in the tumor bears out the theory that this particular tumor arose at the site of a parotid cell nest in the wall of the external auditory canal.

Administration of Liver Extract in Hemophilia.—A fresh extract from the rabbit's liver, which is rich in thrombokinase, was used by Wohl in checking hemorrhage in two cases, after all conventional methods had failed.

New Jersey Medical Society Journal, Orange

22: 407-454 (Nov.) 1925

Surgical Surprises. W. P. Glendon, Bridgeton.—p. 407.
Dermatology; Its Relation to General Medicine. H. J. F. Wallhauser, Newark.—p 416.
Negativism in Childhood. J. H. Marcus, Atlantic City.—p. 424.

New Orleans Medical and Surgical Journal

78: 259-340 (Nov.) 1925

Disabilities of Shoulder Girdle. J. T. O'Ferrell, New Orleans.—p. 259.
Roentgen-Ray Diagnosis of Osteomyelitis. L. J. Williams, Baton Rouge, La.—p. 267.
Mental Hygiene. C. P. May and M. H. May, Jackson, La.—p. 269.
Routine Examination of Eyes in General Diagnostic Clinic. M. F. Meyer, New Orleans.—p. 272.
Treatment of Acute Empyema. E. L. Irwin, New Orleans.—p. 275.
Partnership in Health. W. R. Redden, Washington, D. C.—p. 284.
Modified McReynolds Operation for Pterygium. A. Whitmire, New Orleans.—p. 289.
Purveying of Food Stuffs in Louisiana. O. Dowling, New Orleans.—p. 291.
Heterophoria. R. C. Young, Shreveport, Miss.—p. 298.
Organization and Operation of City Health Department. J. J. Durrett, Memphis, Tenn—p. 303.
Gallbladder. A. E. Gordin, Jackson, Miss.—p. 306.
Normal Size of Thoracic Aorta. A. E. Fossier, New Orleans.—p. 318.

New York State Journal of Medicine, New York

25: 1019-1054 (Nov. 15) 1925

*Surgical Treatment of Cancer; Results. G. W. Crile, Cleveland.—p. 1019.
*Present Status of Treatment of Cancer. B. T. Simpson, Buffalo.—p 1022
Roentgen Ray in Cancer Therapy. B. F. Schreiner and B. T. Simpson, Buffalo—p 1025

Results of Cancer Treatment.—Of 3,414 cases of cancer reviewed by Crile, in which treatment was by all methods, only 926 patients have been heard from, and of these 208 have survived a period of five years or over. One hundred and forty-five of these were breast cancers; fifteen were thyroid cancers and eleven each were cancers of the stomach and of the large intestine, including the rectum. Fifteen were uterine cancers—eight of the cervix and seven of the fundus.

Status of Treatment of Cancer.—Simpson says that it is evident that the unfavorable results obtained in the treatment of cancer of the breast are due to premature metastases. These, most probably, are brought about by excessive handling of the tumor by the patient, and very often by a too vigorous examination by the physician. Simpson urges that there should be instituted a widespread educational attack on this aspect of breast cancer. The danger of manipulation should be brought home, not only to the laity, but also to the medical profession. It should be impressed on the latter that it is not always necessary to make a definite clinical diagnosis of cancer. The presence of a tumor in the breast, whether it is malignant or not, is sufficient evidence to justify an immediate operation.

Oklahoma State Medical Association Journal, Muskogee

18: 253-278 (Nov.) 1925

Orthostatic Albuminuria. T. H. McCarley, McAlester.—p. 253.
*Perinephritic Abscess. J. Z. Mraz, Oklahoma City.—p. 256.
*Acute Nephritis Following Peritonsillar Abscess. J. G. Smith, Bartlesville—p 261
Routine Postoperative Care. J. M. Byrum, Shawnee.—p. 262.
Arterial Accidents in Brain. A. D. Young, Oklahoma City.—p. 264.
Possibilities of Cooperation. A. C. McFarling, Shawnee.—p. 265.

Perinephritic Abscess.—Eleven cases of this type are reported by Mraz. Three were leftsided and eight rightsided; six can be classed as metastatic; four, as of renal origin and one, an extension from an inflamed retrocecal appendix. Four of the six metastatic cases gave a definite history of peripheral infections just prior to or at the time of beginning of symptoms. Two of the eleven patients sustained an injury at the time of beginning of the trouble. One of the injuries was of metastatic and the other of renal origin. Needling was performed in six cases; in two the pus was not located. In one of these the pus was later found anterior to the lower pole and in the other at the upper pole of the kidney. Incision and drainage were done in each case. There were no deaths.

Acute Nephritis Following Peritonsillar Abscess.—Smith reports three cases in which an acute glomerular nephritis manifested itself about two weeks after the patients had recovered from a peritonsillar abscess.

Philippine Journal of Science, Manila

28: 173-310 (Oct.) 1925

*Dysentery Carriers in Philippine Islands. A. Vazquez-Colet.—p. 173.

Dysentery Carriers in Philippines.—The existence of healthy carriers of *B. dysenteriae* in the Philippine Islands has been demonstrated by Vazquez-Colet. The proof was carried out by isolation of cultures which, according to standard methods of identification, proved to be *B. dysenteriae*. In 3,328 examinations fourteen carriers were found, of whom seven harbored the Shiga type, six the Flexner type, and one both Flexner and Shiga types. Agglutination tests were performed with the carriers' serums and with the corresponding culture isolated from the carriers, as well as with stock cultures of the Shiga and the Flexner types. Usually the serum of the carrier agglutinated its own strain to a lesser degree than the stock cultures, and at times a considerable inhibition zone was noticed with the carrier's serum and its own strain. All of the cultures belonging to the Shiga type isolated from the carriers were pathogenic for white mice, and some of them were strongly toxic to rabbits. The cultures belonging to the Flexner type, isolated from carriers, were found to be of low virulence.

Tennessee State Medical Association Journal, Nashville

18: 121-150 (Sept.) 1925

Surgical Clinics of Continent and Notes on British Medical Association. W. D. Haggard, Nashville.—p. 121.
*Instrument Used by Ancients to Overcome Visual Defects. O. J. Porter, Columbia.—p. 131.
Snake Bites; Treatment; Cases. R. F. Regester, Nashville.—p. 133.
Minor Head Injuries; Case. K. S. Howlett, Franklin.—p. 138.
Things That Count. C. P. Fox, Greeneville.—p. 143.
Practical Value of Slitlamp. A. J. Bedell, Albany, N. Y.—p. 146.

Ancient Instrument to Overcome Visual Defects.—In an old cave Porter found a piece of copper ore rock which he thinks was used by prehistoric man to meet, in a most helpful measure, the afflictions of myopia, hypermetropia and astigmatism.

Virginia Medical Monthly, Richmond

52: 475-544 (Nov.) 1925

Contributions of Ophthalmic Science to Progressive Medicine. H. H. McGuire, Winchester.—p. 475.
Relation of Quackery to Scientific Medicine in Virginia. I. Peirce, Tazewell.—p. 479.
Racial Improvement. W. A. Plecker, Richmond.—p. 486.
Problem of Rural Medicine. F. H. Smith, Abingdon.—p. 490.
History and Symptoms in Diagnosis of Pulmonary Tuberculosis. D. R. Lyman, Wallingford, Conn.—p. 495.
Appendicitis in Children. C. S. White, Washington, D. C.—p. 499.
Clinical Significance of Hemorrhage from Rectum. W. L. Powell, Roanoke.—p. 503.
Intravenous Mercurochrome-220; Case Reports. W. M. Bowman, Petersburg.—p. 504.
Relation of Surgeon to Roentgenologist, Pathologist and Follow-Up Record. G. C. Cooke, Winston-Salem, N. C.—p. 508.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

9: 545-608 (Nov.) 1925

Miners' Nystagmus. T. L. Llewellyn and others.—p. 545.

British Journal of Radiology, London

30: 361-398 (Oct.) 1925

Curietherapy of Epitheliomas of Tongue and of Their Following Adenopathy. C. Regaud.—p. 361.
General Principles of Radium Surgery. A. Bayet.—p. 368.
Direct Signs of Duodenal Ulcer. H. H. Berg.—p. 372.
Radiography and Practice of Dental Surgery. F. Colver.—p. 377.
Localization of Brain Tumors by Ventriculography. J. W. Pierson.—p. 384.
Reaction of Skin to Radium Exposure Repeated After Varying Lengths of Time. J. C. Mottram.—p. 387.

British Medical Journal, London

2: 775-822 (Oct. 31) 1925

*Treatment of Insomnia. R. Hutchison.—p. 775.
*Prophylaxis of Mental Disorder. H. Rolleston.—p. 781.
*Rheumatic Infection in Childhood: Early Diagnosis and Preventive Treatment. F. J. Poynton.—p. 788.
Id. II. R. A. Askins.—p. 791.
Diagnosis of Lung Conditions. T. M. Allison.—p. 796.
*Puerperal Insanity. E. A. Wilson and T. Christie.—p. 797.
Poisoning by Copper Salts in Bread. T. H. Gardner.—p. 798.
Pregnancy After Threading Both Fallopian Tubes with Catgut. J. C. M. Martin.—p. 799.

Treatment of Insomnia.—Dyspepsia, constipation and flatulence, either in the stomach or colon, in Hutchison's opinion, are common but usually overlooked causes of insomnia. It may, therefore, be worth while, when no physical cause for the insomnia is evident to try the effect of an alkaline carminative draught at bedtime. Mental discomfort, which will usually take the form of some anxiety state, is another factor in the etiology of this condition. Hutchison believes it to be cant to say that hypnotics should only be used in insomnia as a last resort. He suggests that the fear of establishing a "habit" is a bugbear, and that the possibility of the insomnia becoming a habit is a much more real danger. There are few cases of bad insomnia in which the prescription of an hypnotic is not required at some stage or other. There is a large choice of drugs for this purpose, ranging in potency from the bromids to phenobarbital. The bromids are only indicated in the mildest cases, but the urea bromin compounds are better. Of the more potent drugs the barbital group is, on the whole, the best and barbital sodium, in 7½ grain (0.5 gm.) doses, will meet most indications. Paraldehyd has the disadvantage of advertising itself too openly, but chloral has probably fallen too much into disuse. It has the drawback of irritating the stomach, but that can be overcome by suitable methods of administration, and although it is perhaps wise to avoid it in cases of myocardial degeneration it is otherwise quite safe. Chloralamid is too uncertain in its time of action to be relied on. Of the other hypnotics, trional, from its somewhat delayed action, is specially indicated in those cases in which the patient is awake only in the latter part of the night (so-called internocturnal insomnia). Sulphonal though largely used in asylums is inferior to trional. Phenobarbital is unnecessarily powerful for use except in exceptional circumstances, and morphin should never be administered in primary insomnia outside a mental hospital.

Prophylaxis of Mental Disorder.—In order to disarm popular prejudice, Rolleston would label the psychiatric clinic "Nervous and Psychiatric Department." It should be part of a general hospital, closely connected with a university, so as to provide facilities for research and for teaching medical students, and it would appear that in addition students interested in the experimental and other aspects of psychology would benefit from the opportunities thus provided. While a central laboratory in connection with a psychiatric department attached to a general hospital and a university is the ideal arrangement, psychiatric or mental clinics situated at a distance from university centers should have clinical laboratories for routine work. The prevailing note in the care of early and recoverable patients should be sympathetic conciliation rather than the forbidding coercion—cheerfulness and helpfulness instead of severity and repression.

Rheumatic Infection in Childhood.—The onsets of acute rheumatism in the child, according to Poynton are: (1) cases showing fulmination, the patients readily recognized as being gravely ill; (2) a large group of cases in which sore throat, arthritis, and morbus cordis are the first symptoms; (3) another large group in which chorea and morbus cordis are the beginning symptoms; (4) a group in which chorea only starts the disease; (5) a group in which heart disease alone may take the form of dilatation following sore throat as the cause, and (6) a group in which the rheumatism begins insidiously, usually with multiple symptoms that remit and exacerbate, thus producing the "rheumatic state." Poynton believes the tonsils to be an important site of infection. Skilled enucleation will not prevent a first attack of rheumatism and acute carditis of extreme severity occurring some years later. However, an acute and crippling attack of carditis may directly follow removal of the tonsils in the patient with rheumatism. The successful removal of unhealthy tonsils is a valuable prophylactic step if, undeterred by exceptions, we view the problem on broad lines. Poynton believes that every case must be considered as an entity. He does not favor routine action. He holds that the teeth and gums of children should be kept as healthy as possible, but he can trace no clear connection between acute rheumatism and dental disease in childhood.

Ovarian Extract in Puerperal Insanity.—Five cases are recorded by Wilson and Christie to illustrate the value of the hypodermic injection of ovarian extract in puerperal insanity and possibly in other forms of acute confusional insanity. It probably acts by bringing about the reestablishment of menstruation, because if the patient can be got to menstruate her difficulties are over. The mental breakdown is due to a temporary deficiency in ovarian secretion, a deficiency that can be made up.

Irish Journal of Medical Science, Dublin

289-336 (July) 1925

Lethargic Encephalitis. "Sleepy Sickness." W. M Crofton.—p. 291.
*Infant Mortality in Dublin. B. Crichton.—p. 302.
Otorrhea. J. H. Pollock.—p. 306.

Infant Mortality in Dublin.—The infant mortality, i. e., deaths under 1 year, per thousand births in Dublin, in 1924, was 116, compared to sixty in London. This, Crichton feels, is due to bad housing, lack of food (due largely to unemployment) and ignorance.

Journal of Pathology and Bacteriology, Edinburgh

28: *541-717 (Oct.) 1925*

*Bacteriology of Subacute Infective Endocarditis. H. D. Wright.—p. 541.
Effect of Hemorrhage on Hemolytic Titre of Serum of Rabbits. J. Mills.—p. 579.
*Complement Fixation with Bilharzia. I. Lipoidal Nature of Cercarial Antigen as Used in Complement Fixation Test for Mammalian Bilharziasis. N. H. Fairley.—p. 591.
*Normal Weight of Human Thymus. A. B. Bratton.—p. 609.
*Liver Necrosis and Cirrhosis Produced Experimentally by Coal Tar. J. Davidson.—p. 621.
*Early Phases of Cell Injury; Mitochondria. J. L. Smith and T. Rettie.—p. 627.
*Tuberculous Guinea-Pigs and Diaplyte Tubercle Vaccination. J. S. C. Douglas, J. W. Edington and F. W. Simson.—p. 633.
*Blood Cells of Rabbit After Splenectomy. R. H. Mole.—p. 637.
*Action of Convulsant Thujone. H. Florey.—p. 645.
Preservation of Testes for Transplantation in Rabbits and Dogs. N. M. Shustrov, S. G. Karpova and I. V. Tikhomirov.—p. 651.
Diphtheria Toxin-Antitoxin Flocculation (Ramon) Test. P. J. Maloney and C. B. Weld.—p. 655.
Simple Apparatus for Obtaining Plate Cultures of Anaerobes. W. J. Wilson.—p. 673.
Types of Coliform Organisms Found in Trachea and Bronchi in Seventy Unselected Post Mortems in Man; Agglutination of Bacilli of Friedlaender Type. N. D. Ball.—p. 674.
Unusual Serum Agglutination in Case of Typhoid Fever. J. F. Taylor.—p. 675.
Variations in Platelet Count After Splenectomy in Acholuric Jaundice. S. C. Dyke.—p. 677.

Bacteriology of Subacute Infective Endocarditis.—The esults of Wright's study may be summed up in the following way: When the blood culture has been positive the bacteria re readily demonstrated in the valve lesion. When there has been a terminal invasion by a pyogenic organism there re usually features in the lesions which suggest that this has occurred. In the nonbacteremic cases bacteria are present in he vegetations in the characteristic position but they seem to differ somewhat in appearance from those seen in bacteremic cases, the differences being such as to suggest that they are undergoing disintegration. While these changes are to be observed to some extent in all cases, they are particularly characteristic of the nonbacteremic cases. In one of these, as evidenced by six negative blood cultures, the condition had asted for seventeen months. It must be supposed, then, that he organisms may remain *in situ* for a very long period without appearing in the blood stream. This may be due to the fact that the organisms are dead or that they are prevented from reaching the blood stream by the physical barrier of the thrombus material separating them from it. At the same time they are protected from the phagocytic cells by the same barrier. Consequently, a process of removal by solution or autolysis is necessary and is apparently a very tardy one. Whether the process ever does go on to complete removal and subsequent healing by fibrosis still remains doubtful, but it would appear to be quite possible, though apparently rare. It is clear that disappearance of the septicemia is by no means a cure of the disease which is always fatal in both septicemic and nonsepticemic cases. It is possible that in some of these cases there has never been a septicemia. In others it may have disappeared after a time and the bacteria may have remained in the valve lesion. Cure of the disease would mean the complete obliteration of the focus. Finally, it appears likely, although further evidence is necessary, that the organism responsible for the nonbacteremic cases is of the same nature as that in the septicemic cases, a streptococcus.

Complement Fixation with Bilharzia.—Fairley asserts that the antigen which reacts with specific antibody in the complement fixation reaction for bilharzia is a lipoid or lipoidal complex of colloidal nature. Many of the experimental observations enumerated in this paper are in complete disagreement with the published data of Le Bas, who would identify the antigenic factor in bilharzia antigen with the protein or allied constituents of these extracts.

Normal Weight of Thymus.—The records of 337 healthy persons under 16 years of age, who died either from an acute medical or surgical condition within twelve hours of its onset, or immediately after or within a day of some accident to which death was directly attributable, were reviewed by Bratton with reference to the weight of the thymus. It was found that the absolute weight of the thymus increases rapidly during the first two years of life, then changes little (with a tendency to decrease) till the seventh year, when it again increases, to fall slightly after the eleventh year. The weight of the thymus increases relatively to the body for part of the first six months and then decreases rapidly; after the fifth year the relative decrease continues at a slower rate and is apparently interrupted by a transitory increase during the eighth year. The thymus in the male is heavier at birth and for the first four years of life, after which the weight is approximately equal in the two sexes till the eleventh year, except that a rise and fall about the eighth year occurs in the female; after the eleventh year the thymus tends to be absolutely heavier in the female. There is little difference in the weight of the gland relative to the body in the two sexes; in general it is greater in the male during the first five years of life and afterward in the female. The absolute and relative weights are slightly greater in Jewish than in British children, but the differences are too small to be considered significant.

Experimental Tar Necrosis and Cirrhosis of Liver.—The investigation described by Davidson was undertaken because, in experiments in which coal tar had been applied to the skin of rabbits' ears to produce cancer, it was found that in several of the animals cirrhosis of the liver had supervened. The acute changes are similar to those found in acute yellow atrophy in man. The chronic changes, including regeneration of the liver, closely resemble those of typical atrophic cirrhosis. These observations suggest that the changes observed in acute yellow atrophy and atrophic cirrhosis of the liver are different stages in one process. The regenerated tissue is still susceptible to the irritant. The arrangement of the cells in the regenerated tissue is irregular and in some instances adenomatous growth occurs.

Rôle of Mitochondria in Cell Injuries.—The main conclusion that follows from the observations made by Smith and Rettie is that cell degeneration (cloudy swelling and fatty degeneration) involves a destruction of the mitochondria. These results confirm Cowdry's general conclusion that in changes in mitochondria are to be found the earliest indications of cell injury. The recovery of a cell from degeneration involved a rebuilding of mitochondria and restoration may take place if the damage has not been too severe. It still remains to determine not only the limits of destruction from which recovery may take place but also the conditions that are favorable or essential to the process.

Value of Diaplyte Tubercle Vaccine.—Experiments were made by Douglas et al. to determine whether in tuberculous guinea-pigs diaplyte tubercle vaccine might show any beneficial effect when used over long periods, its administration being begun before, simultaneously with or after the infection of the animals with tubercle bacilli. The results obtained in these experiments correspond very closely with those already recorded by Kettle, Schutze and Bronfenbrenner and Straub. The conclusion which may be drawn is that weekly doses of 0.5 c.c. of diaplyte tubercle vaccine, derived from a strain of tubercle bacilli other than that employed by Dreyer, whether used as an immunizing agent previous to the production of a tuberculous infection, or given as a curative agent from the date of the production of the tuberculous infection, or given after the tuberculous lesions have become well established, is of no avail for combating, in guinea-pigs, tuberculosis resulting from infection with living bacilli of the same strain as that which was used for the preparation of the diaplyte vaccine.

Effect of Splenectomy on Erythrocytes.—Mole removed the spleen or half of it in seventeen rabbits and studied the effect of this on the number of erythrocytes, the number of reticulated erythrocytes, the resistance of the erythrocyte to hypotonic saline and saponin solutions and the number of white cells. Usually a decrease in the number of erythrocytes occurred almost at once; in about a week they began to increase and in two months they were usually more numerous than before the operation. The decrease was usually less marked and the increase began earlier and was more marked after partial splenectomy. The erythrocyte decrease was associated with a considerable reticulocyte increase during the first two weeks, suggesting that the increase in erythrocytes at this period was due to a persistence of the old cells which would have been destroyed but for absence of the spleen. The increase in the erythrocytes two or three months after splenectomy was associated in rather more than half the rabbits with a slight increase in their resistance to hypotonic saline solution. Their resistance to saponin solution was apparently unchanged. Removal of the whole or half the spleen in adult rabbits produced an increase in the number of white cells, chiefly leukocytes, in the first week. This increase was evidently of inflammatory origin, being more marked and persistent after partial splenectomy.

Action of Thujone.—Florey's observations would seem to justify the conclusion that thujone acts directly (in contradistinction to an immediate action on the cerebral blood supply producing fits) on the motor cells of the cerebrospinal axis, as fits are produced in the intact, the decerebrate and the spinal animal. The vasomotor and the respiratory centers are also vigorously stimulated. The evidence is against the participation of the vagus center in the stimulation.

Bulletin de l'Académie de Médecine, Paris

94: 941-960 (Nov. 3) 1925

Entameba Dispar. n. sp. E. Brumpt.—p. 943.
Tests for Color Sense in Railroad Employees. Schaaff.—p. 952.
*Chlorid-Free Milk in Edema. Carrayrou.—p. 955.
Mechanism of Droplet Contagion. A. Trillat.—p. 956.

Milk Freed from Chlorids in Treatment of Edema.—Carrayrou obtained excellent results using milk freed from chlorids in persons with enormous edema and ascites, from a failing heart. The condition of the patients had remained precarious in spite of different heart tonics and an exclusive milk diet. As soon as the ordinary milk was replaced by milk freed from sodium chlorid and potassium chlorid, the output of urine increased, and the edema disappeared in a few days. The daily output of urine, which had not surpassed 300 gm. in one patient, reached 1,250 gm. after six days of this treatment. The edema reappeared when ordinary milk was used again. Recurring attacks of pulmonary edema were arrested in another case when the modified milk was taken. The same benefit was manifest in nephritis and uremia. Puglia's method of dialyzing the milk allows the passage of all salts and phosphates except sodium chlorid and potassium chlorid. A small quantity of lactose is added in order to replace that retained by the dialyzer, and then the milk is sterilized. This chlorid free milk may prove an effectual adjuvant to tonics in heart and kidney disease.

Bulletins de la Société Médicale des Hôpitaux, Paris

49: 1369-1418 (Nov. 6) 1925

*Etiology of Myasthenia. G. Marinesco.—p. 1369.
Myositis Ossificans. G. Paisseau et al.—p. 1375.
*Radial Paralysis and Acute Rheumatism. Dufour and Blondel.—p. 1380.
By-Effects of Barbital and Its Compounds. Pasteur Vallery-Radot and P. Blamoutier.—p. 1382.
Evolution of Chronic Endocarditis. M. Renaud.—p. 1385.
Serotherapy plus Radiotherapy in Malignant Granulomatosis. Lortat-Jacob et al.—p. 1394.
*Cirrhosis and Bronzing in a Syphilitic. Lévy and Jausion.—p. 1400.
Radiography of Esophagus in Pulmonary Tuberculosis. G. Paisseau et al. —p. 1406.
Recovery in Case of Multiple Sclerosis under Treatment for Syphilis. Paulian.—p. 1416.

Pathogenesis of Myasthenia.—Marinesco reports two cases of myasthenia which may be ascribed to disturbances of the vegetative nervous system, of suprarenal origin. Reduced formation of substances controlling the vascular tonus appears to be responsible for the inverted vasomotor reaction, consisting in dilatation of the vessels during voluntary muscular contractions. This probably affects the acid-base balance of the muscle fibers, stimulating the activity of the hydrolytic and lipolytic ferments, and thus creating lesions of the muscles. The inverted vasomotor reaction was absent in one patient, who improved remarkably under epinephrin treatment, while it existed in the other with still pronounced myasthenia. Changes in the suprarenals may also entail exaggerated functioning of the parathyroids, with consequent hypercalcemia. Subcutaneous and intramuscular injections of epinephrin appeared to be as effectual as the intravenous.

Radial Paralysis of Rheumatic Origin.—Dufour and Blondel describe a case in a man, aged 32. Sudden paralysis of the radial nerve had preceded the acute rheumatism manifestations in the shoulder and wrist. The peculiar feature was the restriction of the paralysis to a single nerve; neuritis complicating rheumatism is usually multiple. The paralysis may have been caused by the virus of the acute articular rheumatism. Salicylate treatment proved effectual.

Cirrhosis of the Liver with Bronzing in a Syphilitic.—Lévy and Jausion report that the skin returned to its normal color under treatment for the syphilis, and the symptoms of mild diabetes subsided with the melanoderma.

Comptes Rendus de la Société de Biologie, Paris

93: 979-1056 (Oct. 30) 1925. Partial Index

*Metabolism with Tar Cancer. A. Remond et al.—p. 979.
*Blood Lipoids with Tar Cancer. A. Remond et al.—p. 981.
Inoculation of Herpes Zoster Virus. Remlinger and Bailly.—p. 983.
Experimental Joint Echinococcosis. F. Dévé—p. 986.
Tuberculin Test and Cholesteremia. M. Salomon and De Potter.—p. 988.
Water in Acid-Base Balance of Blood. Solano Ramos and L. Garcia Fox. —p. 989.
*Oxygen of Methemoglobin. V. Balthazard and M. Philippe.—p. 991.
Adaptation of Intestine to Epinephrin. Gautrelet and Bargy.—p. 997.
*Ultraviolet Rays and Lymphoid Tissue. J. Jolly.—p. 999.
Influence of Respiration on Sedimentation. Roger and Binet.—p. 1002.
Metabolism Under Various Treatments of Rickets. Schultzer.—p. 1008.
*Mesenteric Tuberculosis in Child. M. Acuña et al.—p 1014.
Regeneration of Nerve Tissue. P. del Rio Hortega.—p. 1018.
Acid-Base Balance in Emphysema. L. Dautrebande.—p. 1025.
Acid-Base Balance in Tuberculosis. L. Dautrebande.—p. 1028.
Heart Beat Blood Volume in Anemia. L. Dautrebande.—p. 1029.
Paradoxic Alkalosis in Pernicious Anemia. L Dautrebande.—p. 1031.
Mechanism of Epinephrin Apnea. J. F. and C. Heymans.—p. 1032.
*Acetylene Anesthesia. C. Heymans and J. J. Bouckaert.—p. 1036.
*Acidosis, Alkalosis and Chronaxia. H. de Waele.—p. 1038.
Plasma Fibrinogen in Shock. E. Zunz and J. La Barre.—p. 1042.
*Blood Cholesterol in Shock. E. Zunz and J. La Barre.—p. 1044.
*Lytic Principle and Culture Antigen. E. B. McKinley.—p. 1052.
*Spontaneous and Induced Lysis. J. Bordet.—p. 1054.

Basal Metabolism in Course of Experimental Cancer.—Remond, Sendrail and Lassalle found the basal metabolism reduced in eight rabbits with tar cancer. They are inclined to ascribe the fact to an insufficient functioning of the thyroid gland, caused by the tar, thus favoring the appearance and development of the tumor. Their further research proved that while hypercholesteremia is usual in the precancerous stage, there is a decrease of the free cholesterol and lecithins with a developed tumor. The proportion of fatty acids is increased. The authors point to the recent work of Carrel, Mertens and Lipschütz tending to confirm that tar cancer is rather a tissue manifestation of a general derangement than a product of irritation.

Oxygen Content of Methemoglobin.—Balthazard and Philippe acknowledge their error in agreeing formerly with Jäderholm. After they had repeated Jäderholm's experiment in a vacuum from which oxygen had been completely expelled, it showed that methemoglobin is transformed directly into hemoglobin, without its passing through the stage of oxyhemoglobin. The latter appears to contain twice as much oxygen as methemoglobin.

Action of Ultraviolet Rays on Lymphoid Tissue.—Jolly concludes that the action of ultraviolet rays on lymphoid organs is essentially similar to that of the roentgen and radium rays. The lesions are confined to the exposed area, not affecting the tissues deeper than 0.5 mm. at most. The latency time is about the same as with roentgen rays and certain toxic substances.

Tuberculous Mesenteric Glands in Young Child.—Acuña and his co-workers observed the case in a child, about 2 years old, whose sister had died from tuberculosis, and who had been in contact with a tuberculosis suspect. It died soon after an exploratory operation showing a mesenteric tumor. Cheesy degeneration of the mesenteric glands, and miliary tuberculosis of lungs and viscera were found on microscopic examination. Infection probably appeared during the first year, and was of intestinal origin. [A more detailed report, with photomicrograms, was published in the *Semana Médica*, **2:**617 (Sept. 10) 1925.]

Acetylene in General Anesthesia.—Heymans and Bouckaert used acetylene for anesthesia in about fifty operations, lasting from a few minutes to three hours. The usual initial phase of excitation did not occur; the patient inhaling the anesthetic deeply went under without resistance or agitation. A combination of 80 per cent. of acetylene with 20 per cent. oxygen, induced insensibility and muscle relaxation in three minutes. The toxic effect of acetylene seemed to be very slight, since the subject wakened rapidly and in a better general condition than after chloroform or ether. The disadvantages of the method, namely the large size of the apparatus, the complicated technic and the inflammability of acetylene are offset by its advantages.

Influence of Acidosis and Alkalosis on Chronaxia.—De Waele injected acids and alkalis into the lymph spaces of frogs and turtles. Chronaxia and rheobasis appeared to be decreased in acidosis, and increased in alkalosis.

Cholesterol Content of Blood in Shock.—Zunz and La Barre's experiments on guinea-pigs repeatedly showed a marked increase of cholesterol in the plasma and total blood, and a slight reduction of fatty acids in the plasma during an anaphylactic shock.

Action of Lytic Agent on Culture Antigen.—McKinley's research confirmed Bordet's theory that the lytic agents are bacterial products, important in the development of cultures. They may modify the specific antigen of the micro-organisms.

Active and Passive Transmissible Lysis.—Bordet experimented with a colon bacillus displaying a lytic action on the Shiga bacillus. No lysis occurred as long as the colon bacillus (A) was exposed to its own lytic element. This represented the normal physiologic condition. Lysis appeared when the colon bacillus (A) was submitted to a lytic element from a certain other variety of the colon bacillus (B). The colon bacillus (A) adapted itself to the new lytic element and continued to reproduce it even after it had been isolated from its influence. This is the spontaneous or active lysis. Exposed to a lytic element from a different species, the colon bacillus reproduced it only as long as the contact persisted, but not otherwise. This is the passive or induced lysis. Bordet assumes that these facts confirm his theory of a transmissible autolysis.

Paris Médical

57: 397-412 (Nov. 14) 1925

Prolonged Acute Bronchitis. G. Rosenthal.—p. 397.
*Sedimentation and Pneumothorax. Papanicolau and Weiller.—p. 400.
*Reaction of Liver to Arsphenamin. L. Masson.—p. 403.
*Tubercle Bacilli in Urine. G. Esquier.—p. 405.
*Ocular Spasms After Epidemic Encephalitis. D. Paulian.—p. 409.

Sedimentation Test as Guide in Artificial Pneumothorax.—Papanicolau and Weiller's observations were made on patients with artificial pneumothorax induced for grave pulmonary tuberculosis. Sedimentation was usually rapid in these cases, but it changed immediately after the operation, becoming notably reduced if the compression involved the most pathologic part of the lung. With imperfect compression, and consequent aggravation of the condition, the speed of sedimentation became rapid again. Appearance of a pleural effusion was accompanied by acceleration of sedimentation. The speed increased still more with a purulent exudate, while it was normal in case of resorption of the pleural fluid. Thus the sedimentation test may demonstrate the effect of an artificial pneumothorax or thoracoplasty, or even reveal menacing complications.

Action of Arsphenamin Injections on the Liver.—Masson states that he has never encountered an instance of toxic jaundice from intramuscular injections of sulpharsphenamin, in his large experience. He reports a case in which these injections apparently cured syphilitic jaundice. Experiments on rabbits indicated that intramuscular injections of arsphenamin are less toxic for the liver than the intravenous. Their action is the same, although somewhat retarded.

Detection of Tubercle Bacillus in Urine.—Esquier used a simplified Gauthier method for examination of the urine in 111 patients. The tubercle bacillus could be detected in over 33 per cent. of the cases of tuberculous epididymitis; in 88 per cent. of tuberculosis of the bladder, and 78 per cent. of renal tuberculosis. He thus showed up the bacilli in five minutes in 95 per cent. of the cases.

Paradoxic Ocular Spasms After Epidemic Encephalitis.—Several of Paulian's patients presented, among other sequelae of epidemic encephalitis and parkinsonism, spasms of the orbicularis muscles. Besides spasmodic retraction and relaxation of the orbicularis palpebrarum and oris, there was speech disturbance of the stuttering type and paradoxic dyskinesia.

Presse Médicale, Paris

33: 1457-1472 (Nov. 4) 1925

Wernicke's Aphasia. C. Foix.—p. 1457.
Immunization by Anatoxin and Bacteriophage. P. Lesbre.—p. 1459.
Remote Results of Epididymectomy. N. Barbilian.—p. 1460.

33: 1473-1488 (Nov. 7) 1925

*Deficiency Disturbances. G. Mouriquand.—p. 1473.
*Sugar Treatment of Epilepsy. S. Wladyczko.—p. 1475.
*"Immunization Against Scarlet Fever." A. Bourcart.—p. 1477.
Iodin in Pulmonary Tuberculosis. Nigoul-Foussal.—p. 1478.
*Treatment of Spastic Ileus. T. Asteriadès.—p. 1480.

Deficiency Diseases.—Mouriquand considers deficiency disturbances from inadequate alimentation, defective digestion or absorption, and from defective nutrition. The latter includes deficient transformation, distribution and assimilation of the elements of the food. Instances of alimentary deficiency are vitamin C deficiency which is manifested by scurvy; vitamin A deficiency, inducing hemeralopia, and vitamin B deficiency, producing the beriberi syndrome. The deficiency of digestive origin is due to insufficient mastication or deglutition, or to obstacles in the gastro-intestinal tract. An insufficient secretion of digestive juices may impede the absorption of the food. Deficient nutrition or deficient metabolism of the cells is provoked by lesions of the liver, suprarenals, and particularly of the bone marrow, the organs controlling the metabolism. In these cases the food may be appropriate, and digestion normal, but assimilation of the alimentary substances will be defective.

Sugar in Treatment of Epilepsy.—Wladyczko induced convulsions in rabbits, mice and dogs by injections of insulin, with the consecutive hypoglycemia. He also noted an increase of epilepsy cases in Russia at a time when the supply of sugar was scarce. Thereupon he tried the sugar treatment in epileptics with hypoglycemia. In eighteen cases the seizures became rarer and milder; in five they appeared only once in from four to six months, while before the treatment they occurred every day in one patient, and three or four times in a month, in the others. Since blood with a reduced sugar content may irritate the nervous centers, causing convulsions, it seems that administration of sugar should prevent them. The effect of sugar may be ascribed also to an enhancing action on drugs, given at the same time. From 50 to 100 gm. of glucose, dissolved in water, with lemon juice, or 200 gm. of sugar was given daily by the mouth. The amount of sugar was reduced to 5-25 gm., when sweet fruits or syrups were being taken.

Immunization Against Scarlet Fever.—Bourcart immunized Dick positive subjects by repeating the Dick test on new areas of skin at two or three days' intervals, and keeping this up until the reaction veered to negative. In his thirteen cases, this occurred after three to nine applications of the Dick test in eleven.

Intraspinal Anesthesia for Spastic Intestinal Occlusion.—Asteriadès says he applied intraspinal anesthesia in three cases of spastic ileus, following abdominal operations, and the complication subsided promptly. Thus the patient was saved by the intraspinal anesthesia possibly from a futile laparotomy. The spastic occlusion appears suddenly, during the first few days after an operation, while a mechanical occlusion from adhesions or volvulus does not develop until ten to thirty days after the laparotomy. The differentiation from acute peritonitis may be based on the normal pulse and temperature in spastic occlusion. Vigorous peristaltic contractions of the nonaffected portion of the intestine above the region of the spasm may be visible sometimes. This is a valuable diagnostic sign when encountered. He used procain for the intraspinal anesthesia; the spasm was arrested at once, and stool was voided explosively in less than two minutes.

Schweizerische medizinische Wochenschrift, Basel

55: 1017-1040 (Nov. 5) 1925

*Cystic Mamma and Its Latency Stage. M. Askanazy.—p. 1017.
Balneology. K. Spiro.—p. 1021.
Subdural Spinal Tumor. O. Veraguth.—p. 1022.
Paradoxic Pulse with Pericardial Effusion. Roch and Frommel.—p. 1027.
Cavernous Hemangioma of the Tongue. H. Baumgartner.—p. 1030.
*Social Hygiene and Mortality. A. Gigon and F. Kinzler.—p. 1033.

Cystic Mamma.—Askanazy deals with the latent stages of cystic epitheliofibrosis of the breast (Reclus' disease). He found them in 33 per cent. of elderly women and in 25 per cent. of girls and women under 40 years of age. The epithelium of the breast is easily irritated, and proliferates in a degree that would arouse suspicions in other organs. Extirpation of the tumor is indicated in the stage of a tubulopapillary cystoma. Extensive intervention is necessary if the spaces are overcrowded with heaps of epithelial cells, containing mitoses, and if lymphocytic infiltration is beginning. There is no question about the malignancy if the epithelium invades the lymphatic spaces of the stroma.

Social Hygiene and Mortality.—Gigon and Kinzler find that the increase in life expectancy in men is smaller in Switzerland than in Germany. It is the opposite with women.

Policlinico, Rome

32: 1485-1520 (Oct. 26) 1925

*Specific Treatment of Typhoid. A. Cavazzuti.—p. 1485.
Meinicke's Microreaction. G. Spicca.—p. 1487.

Specific Treatment of Typhoid.—Cavazzuti reports on the specific treatment of typhoid fever in forty-seven patients. Of the twenty-three subjects treated with a serum, seven died (32 per cent.). Sanfelice's vaccine was used in twenty-four other patients. Three of these died (12.5 per cent.).

32: 1521-1556 (Nov. 2) 1925

Diagnosis of Cardiospasm. A. Knipfer.—p. 1521.
Treatment of Epidemic Encephalitis. M. Faberi.—p. 1524.
*Benzyl Benzoate in Hypertension and Dyspnea. G. F. Capuani.—p. 1526.

Benzyl Benzoate in Hypertension and Dyspnea.—Capuani found that benzyl benzoate lowers the blood pressure in those cases of hypertension which are of purely functional origin. At the same time it causes a general feeling of weakness. It acted well in some of his asthma patients.

32: 1557-1592 (Nov. 9) 1925

Sanocrysin in Treatment of Pulmonary Tuberculosis. Benedetti.—p. 1557.
Cystic Kidneys. E. Sciaky.—p. 1564.

32: 1593-1628 (Nov. 16) 1925

*Diagnosis of Beginning Tuberculosis. D. Maestrini.—p. 1593.
Preventive Vaccination Against Tuberculosis. C. Benedetti.—p. 1599.

Diagnosis of Beginning Tuberculosis.—Maestrini observed in 90 per cent. of beginning or advanced cases of tuberculosis of the apex of the lungs a marked hyperalgesia to pressure at a point of the lesser supraclavicular fossa (between the two lower tendons of the sternocleidomastoid muscle). He regards it as due to a Head's zone.

32: 533-588 (Nov. 1) 1925. Medical Section

Lumbalgia Attributed to Strain. S. Diez.—p. 533.
Acute Anterior Poliomyelitis. M. Acqua.—p. 558.
*Liver and Postencephalitic Conditions. A. Graziani.—p. 573.

Liver and Postencephalitic Condition.—Graziani found in eleven patients with postencephalitic syndromes only very slight, if any, clinical signs of a disturbance of the liver. The anatomic changes at necropsy in three other cases were also only slight.

Riforma Medica, Naples

41: 985-1008 (Oct. 19) 1925

Hygroma of Bursa Subserrata. L. Torraca.—p. 985.
*Coma from Interruption of Insulin Treatment. F. Schiassi.—p. 990.
*Experimental Cancer Vaccination. G. Tizzoni et al.—p. 995.

Coma from Interruption of Insulin Treatment.—Schiassi found a large increase in blood sugar in a diabetic patient as soon as the action of insulin ceased. Administration of a new small dose of insulin reduced the glycemia—probably refilling the glycogen deposits in the liver, which are particularly changeable in diabetes. Simultaneous intravenous *injections of glucose in coma not only prevent the danger* from hypoglycemia, but also serve to replenish the liver glycogen.

Experimental Cancer Vaccination.—Tizzoni, Centanni and De Angelis exposed an emulsion of cells of Ehrlich's mouse adenocarcinoma to the action of radium. The cells lost their *pathogenicity after twenty-four hours, but this emulsion* injected near the tumor of other mice, induced its complete resorption. It was ineffective if irradiated for forty hours.

Rinascenza Medica, Naples

2: 489-520 (Nov. 1) 1925

Cholecystography. L. Radice.—p. 489.
Clinical and Necropsy Findings in Case of Hodgkin's Granuloma. I. Nasso.—p. 491.
Actinomycosis of Upper Jaw. C. D'Alise.—p. 494.
*Urine Color Test for Peritonitis. M. Sorrentino.—p. 496.
*Therapeutic Action of Sugar in Certain Dermatoses. P. Conca.—p. 498.
The Practical Value of the Wassermann Test. U. Cavallucci.—p. 500.

Early Sign of Peritonitis.—Sorrentino states that the Sgambati urine test was positive in twenty-four of twenty-five cases of acute peritonitis, sometimes before the clinical manifestations had developed, while he never obtained a positive response in simple contusions and other noninflammatory abdominal affections.

Sugar Treatment in Dermatoses.—Conca reports that intramuscular injection of 2 or 5 c.c. of an 8 per cent. solution of saccharose favorably modified the course of eczema, psoriasis and prurigo in a number of his cases. The smaller doses seemed to act by influencing the endocrine system, the larger by a vasoconstrictor effect. In one young man with an intensely itching eczema on the legs and scrotum of six months' standing, the pruritus gradually subsided completely in two weeks and no further treatment of any kind was required after the fifteenth day.

Revista Médica de Barcelona

4: 233-328 (Sept.) 1925

Magnesium Sulphate by the Vein in Case of Postpartum Eclampsia. S. Dexeus Font.—p. 237.
*Specific Treatment of Malta Fever. P Domingo.—p. 240.
Treatment of Tinea Tonsurans. J. Soteras y Gibert.—p. 249.
Madelung's Deformity. A. Cortés Llado and L. Salvador Gallardo.—p. 251.
Case of Postoperative Tetanus. A. Oller.—p. 275.
The Prognosis with Arterial Hypertension. C. Soler y Dopff.—p. 278.

Malta Fever.—Domingo remarks that four of his laboratory assistants contracted the disease in their four years of research on melitensis infection, with analysis of 180 cases and extensive animal experiments. Excellent results in treatment were realized with an emulsion of ox-gall-treated melitensis micrococci by the mouth. In rebellious cases, protein therapy proved a useful adjuvant, as likewise epinephrin in cases of hypotension. Of sixty-three patients, 65 per cent. were cured in less than two weeks; 17.3 per cent. required thirty days, and 6.2 per cent. up to forty-five days. There was recurrence only in 11.5 per cent.

Archiv für Gynäkologie, Berlin

126: 291-708 (Oct. 14) 1925

*Metabolism After Milk Injections. W. Butomo.—p. 291.
The "Germinal Path" in Man. S. Kohno.—p. 310.
Duration of Pregnancy. W. Poten and W. Boetticher.—p. 327.
Spontaneous and Provoked Ovulation. R. Hofstätter.—p. 350.
Blood and Glycemia Tests in Women. E. Frey.—p. 383.
Angioplastic Tumors of Vagina. A. Seitz.—p. 488.
Adenomyosis of Uterus. I. Kitai.—p. 496; p. 527.
*Metabolism in Pregnancy. E. Klaften and L. Stecher.—p. 541.
Tubular Adenoma of Ovary and Hermaphrodism. H. O. Neumann.—p. 553.
Polyp of Female Urethra. H. R. Schmidt.—p. 602.
Proliferations of Blood Vessels and Lymphatics. R. Meyer.—p. 609.
*Diagnosis of Univitelline Origin of Twins. H. W. Siemens.—p. 623.
*Ovaries and Blood Calcium. A. Heyn and K. Haase.—p. 646.
Brow Presentation. H. Martius.—p. 671.
Accessory Mammary Glands and Nipples. C. John.—p. 691.

Metabolism After Milk Injections.—Butomo observed *an increased elimination of nitrogen and phosphates after parenteral injections of milk in normal dogs and in those infected* animals which had had no increased elimination of these substances before the injection. Where the infection had raised the azoturia and phosphaturia, milk injections reduced them. Patients who reacted to protein treatment, with a lowering of the elimination of nitrogen and phosphates, had a favorable prognosis. It was the opposite when the elimination was enhanced.

Metabolism in Pregnancy.—Klaften and Stecher found a low specific dynamic action in too young and in too old primigravidae, also in dropsy and in the kidney disease of pregnancy.

Diagnosis of Univitelline Origin.—Siemens shows how unreliable the history of twin delivery is. Even the cases in which records were kept were not examined sufficiently: The chorion is more important than the placenta. Separate membranes do not disprove the possibility of a univitelline origin: Only a third of these pairs are of different sex (against the expected 50 per cent. if all were bivitelline). The percentage of different sex in all twin pregnancies shows that 25-33 per cent. should be univitelline. This alone speaks for the probability of occurrence of univitelline twins with separate membranes. A careful examination of the twins points also toward this possibility.

Ovaries and Blood Calcium.—Heyn and Haase found high serum calcium figures in grave functional amenorrhea, and low values in the first year after castration. They conclude that these findings cannot be explained by a direct influence from the ovary on the blood calcium.

Deutsche medizinische Wochenschrift, Berlin

51: 1851-1892 (Nov. 6) 1925

*Germ Content of Vaccines. H. Dold.—p. 1851.
Standardization of Dysentery Antiserum. H. Schlossberger and O. Hartoch.—p. 1854.
*Sympathetic Paraganglion on Left Heart. S. Wassermann.—p. 1855.
Malaria Treatment of General Paralysis. Schulze —p. 1856.
Dry Complement. M. Stern and T. Frank.—p. 1858.
*Treatment of Simple Abortion. K. Fink.—p. 1862.
Anomalies of Labor Pains. W. Hannes.—p. 1866.
*Elective Action of Rays. J. Seide.—p. 1868.
The Blood After Operations. H. Hueck.—p. 1869.
Blood Diseases. W. Steinbrinck.—p. 1870. C'cn.
Precocious Menstruation. R. A. Grillo.—p. 1871.
Cadmium Treatment of Syphilis. Lucke.—p. 1873.
Treatment of Psoriasis. J. Mestschanski.—p. 1874.
Instrument for Venepuncture. E. Weidlinger.—p. 1874.
Heart Remedies. H. Handovsky and R. Seyderhelm.—p. 1875.
Austrian Law Regulating Midwifery. Hammerschlag.—p. 1877.
Social Insurance and Tuberculosis. Blümel.—p. 1878. C'td.
A Law Suit on Telepathy. A. Hellwig.—p. 1879.
Action of Minimal Doses. Buttersack.—p. 1890. C'td.

Germ Content of Vaccines.—Dold finds that a control of commercial vaccines by counting of the germs is impossible and useless. The methods of counting involve grave errors. An estimation of the turbidity is sufficient. The number of germs decreases because of the autolysis, although the antigenic value does not necessarily deteriorate by it.

Sympathetic Paraganglion on Left Heart.—Wassermann draws attention to the chromaffine tissue discovered by Wiesel in the neighborhood of the left coronary artery. Similar to Dünner's explanation of the carotid glomus as a receiving organ for the "vagus pressure experiment," he believes that Wiesel's organ may be the origin of the reflex angina pectoris.

Treatment of Simple Abortion.—Fink denounces the use of sounds, abortion forceps and sharp curet in treatment of abortion. Drugs (quinin, pituitary, ergot) are valuable in terminating the spontaneous abortion, especially if the ovum is still in the uterus. Sufficient dilatation of the cervix and evacuation with a finger is the method of choice if this fails. The original Winter forceps is the only one permissible, and only for removing those parts which the finger can free but can not remove. A large blunt curet is useful if the finger is unable to separate the whole ovum or if only small remnants are to be removed.

Elective Action of Rays.—Seide confirms the greater injury of ascaris ova under roentgen rays when the ova are in the first stages of their development. Yet he also confirms Ruppert's observation to the contrary when using ultraviolet rays: The riper embryos were more susceptible to these than the early stages. Thus the Bergonié-Tribondeau law applies only to roentgen and radium rays.

Klinische Wochenschrift, Berlin

4: 2137-2184 (Nov. 5) 1925

Pigmentations of Hemoglobin Origin. O. Lubarsch.—p. 2137.
*Death from Electric Current. H. Schridde.—p. 2143.
*Constitution and European Races. K. O. Henckel.—p. 2145.
*Skin Test in Inguinal Lymphogranuloma. W. Frei.—p. 2148.
*Antiserums to Monogenous Antigens. Friedberger and Ikeda.—p. 2149.
*Hemorrhages in Insulin Treated Coma. Ehrmann and Jacoby.—p. 2151.
*Specific Dynamic Action of Proteins. R. Liebeschütz-Plaut.—p. 2153.
*The Blood in Cyanid Poisoning. M. Hasselmann.—p. 2154.
Colon Bacillus Pyelitis. W. Löwenberg.—p. 2155.
"Weak. Irradiation." Schwarz.—p. 2156. Reply. Heimann.—p. 2157.
"Emotion and Logic in Homeopathy." Bastanier.—p. 2157. Reply. Heubner.—p. 2158.
*Acetonemia in Pregnancy Toxicosis. Bokelmann and Bock.—p. 2158.
Monosegmental Innervation of Muscles. S. de Boer.—p. 2159.
Rupture of Spleen in Therapeutic Malaria. Trömner and Baltzer.—p. 2159.
Roentgen Treatment in Gynecology and Obstetrics. Schumacher.—p. 2160.
Immunization Against Streptococci and Pneumococci. Killian.—p. 2166.
An Esthesiometer. R. Fleischhauer.—p. 2183.

Death from Electric Current.—Schridde made postmortems on thirty-seven men who had been killed by electric currents of not more than 220 to 250 volts. He found in thirty-six of them typical signs of a "thymic constitution": the lower extremities were long, the neck short, the skin frequently fine and pale and with only little hair, especially in the axillae, little or no beard, and a heterosexual or intersexual type of pubic hair. The thymus gland and spleen were enlarged. The only exception was one elderly man in poor general condition. Burns were not always present. In the positive cases they were on the left hand (shorter route to the heart) in 90 per cent. Therefore the old recommendation to keep one hand (the left) in the pocket while working was sensible. Edema of the lungs was present in twenty-one of his cases. The death in the remaining fifteen might be explained by fibrillation of the ventricle.

Constitution and Racial Type.—Henckel found in Sweden the same frequency of a leptosomatic (asthenic, slender) and muscular (broad) and dysplastic type in schizophrenia, and of the pycnic type in cyclic psychoses as elsewhere in Europe. Therefore the explanation of the constitutional types as racial types is not correct. He found no disturbance of correlation of external characters, such as the color of hair and eyes, in his material.

Skin Test in Inguinal Lymphogranuloma.—Frei obtained a skin reaction with an antigen prepared from the pus from the bubo in nine cases of so-called inguinal lymphogranuloma. The complement fixation tests with the serum from these patients were negative.

Antiserums to Monogenous Antigens.—Friedberger and Ikeda observed the formation of two rings in precipitation tests for serum. The upper consists of fine floccules which turn black under the action of osmic acid. The lower consists of heavy floccules which are not lipoid. They believe that nobody, including themselves, had observed the formation of two rings before. They explain the upper ring as due to heterogenous antibodies. It can be prevented by treating the serum with any boiled protein. A heterogenous antigen or toxin causes only the formation of one ring, they say.

Hemorrhages in Coma Treated with Insulin.—Ehrmann and Jacoby observed hemorrhages, especially in the brain and lungs, in twelve cases of diabetic coma, treated with large or small doses of insulin. In five of these patients, spasms of the face or extremities were probably due to the hemorrhages. Four of their patients had complained of colic in the mesogastrium.

Specific Dynamic Action of Proteins.—Liebeschütz-Plaut points out that the specific dynamic action of the proteins begins only after their resorption. A deficient function of the stomach delays it. She rates its average at 30 per cent. of the basal metabolism, and less with increased basal metabolism. She is inclined to explain Pollitzer and Stolz' results by their faulty technic.

The Blood in Cyanid Poisoning.—Hasselmann found a moderate polycythemia in people employed in the manufacture or handling of hydrocyanic acid. The number of leukocytes with basophilic granulation was increased in some of them.

Acetonemia in Pregnancy Toxicosis.—Bokelmann and Bock had found an increased amount of acetone in the blood in pregnancy. It was especially high in toxemia.

Medizinische Klinik, Berlin

21: 1673-1712 (Nov. 6) 1925

Surgical Treatment of Peritonitis. H. Wildegans.—p. *1673*.
Treatment of Furunculosis. A. Buschke and E. Langer.—p. 1675.
Intestinal Lymphogranulomatosis. R. Pamperl and C. Terplan.—p. 1679
*Thoracic Zoster and the Stomach. Hess and Faltitschek.—p. 1683.
Injury of Cranial Nerves by Intraspinal Anesthesia. F. Blaschke and G. Herrmann.—p. 1685.
Echolalia or Deafmutism? E. Schlittler.—p. 1686.
*Local Chilling in Disease in Parietal Lobe. E. Wodak.—p. 1688.
Hematology of Scarlet Fever. H. Bix.—p. 1689. C'td.
Serum Sickness. Goldschmidt.—p. 1691.
Hospitalism in Infants. L. Bytsch.—p. 1692. C'td.
Cutaneous Appendices on Neck. W. Smital.—p. 1693.
Peristalsis of the Tubes. F. Kok.—p. 1694.
*Fixation of Bacteriophage on Bacteria. S. Kimura.—p. 1695.
Survey on Gynecology. W. Liepmann and W. Brusten.—p. 1698.

Thoracic Herpes Zoster and the Stomach.—Hess and Faltitschek observed hypermotility and hypersecretion of the stomach in patients with herpes zoster of the thoracic segments—especially of the lower ones. The gastric disturbances disappeared together with the eruption.

Local Chilling in Disease in Parietal Lobe.—Wodak induced a past-pointing reaction by chilling of the skin over the parietal lobe in a patient with an operative defect of the bone in that region.

Fixation of Bacteriophage on Bacteria.—Kimura reviews the experiments on fixation of bacteriophages by living and killed bacteria. The specific antibacteriophage serums prevent their fixation on the germs. The affinity of the serums for the bacteriophage is weaker than the affinity of the bacteriophage for the germs.

Münchener medizinische Wochenschrift, Munich

72: 1907-1950 (Nov. 6) 1925

Functions of the Liver. F. Fischler.—p. 1907. C'td.
*Roentgen Irradiations in Syphilis. F. Wirz.—p. 1910.
*Influencing the Insensible Perspiration. Moog and Eimer.—p. 1912.
Syphilis and Human Milk. G. Schwarz.—p. 1916.
*Treatment of Atrophy of Pigment. Axmann.—p. 1918.
*The Misshapen Foot of Civilization. E. Fischer.—p. 1918.
Mites in Feces. J. Wertheimer.—p. 1920.
"Microtest for Blood Sugar." L. Lorber.—p. 1921.
Psychopathology in Homer. R. Ganter.—p. 1924.
Early Diagnosis of Cancer of Large Intestine. A. Krecke.—p. 1926.
Social Medicine and Racial Hygiene. L. Gelpke.—p. 1927.
Precolumbian Syphilis in the Near East. P. Hildebrand.—p. 1928.

Roentgen Irradiations in Syphilis.—Wirz observed four syphilitic patients who had been subjected to treatment with roentgen rays because of a blunder in diagnosis. One of them was thus mistreated in the primary stage (a virgin with chancre of the tonsil acquired at a kissing game); the three others were in the tertiary stage. The syphilis was grave and relatively refractory to treatment in all of them. The rays had been applied to the cervical lymph nodes, the skin or the lip.

Influencing the Insensible Perspiration.—Moog and Eimer found a decrease of the insensible perspiration after intravenous injections of 10-20 c.c. of a 10 per cent. solution of sodium chlorid; an increase after 10 c.c. of a 10 per cent. solution of calcium chlorid and a delayed decrease after intramuscular injection of 5 c.c. of a 50 per cent. solution of cane sugar.

Treatment of Atrophy of Pigment. — Axmann utilizes Freund's observation on the photosensitizing action of eau de cologne in phototherapy of vitiligo.

The Misshapen Foot in Civilization.—Fischer attributes the frequency of deformities of the foot in the Western nations to six causes: the premature teaching of children to walk, the training to turn out the toes, outward rotation of the foot, the unphysiologic manner of walking, the unnecessary and excessive standing, and the incorrect way in which shoes are made. He discusses the latter nuisance in detail, and describes his device for obtaining the correct shape of the shoe to fit the foot.

Wiener klinische Wochenschrift, Vienna

38: 1201-1228 (Nov. 5) 1925

*Peptone Therapy. H. Pollitzer.—p. 1201.
*Chemotherapy. P. Saxl et al.—p. 1202.
*Function of Suprarenal Cortex. W. Falta.—p. 1203.
*Endocrine Relations Between Mother and Fetus. R. Neurath.—p. 1206.
Traction-Extension Splints. L. Moszkowicz.—p. 1207.
Partial Antigens. F. Mattausch.—p. 1209.
Paralysis of Cranial Nerves. J. Brief.—p. *1212*
*Hypnosis Combined with Narcotics. P. Schilder.—p. 1213.
Pathology and Treatment of Leukorrhea. Novak. Supplement.—pp. 1-12.

Peptone Therapy.—Pollitzer found in intramuscular injections of from 2 to 5 c.c. of a 5 per cent. solution of peptone a good antidote against the diarrhea following injection of novasurol. He had favorable results with it in a case of colitis, and in hemoptysis. The excellent effect in asthma is also confirmed.

Chemotherapy.—Saxl, Donath and Kelen protected rabbits by injections of acriflavin and other substances against a subsequent infection with lethal doses of colon bacilli.

Function of Suprarenal Cortex.—Falta concludes that the cortex of the suprarenals exerts a strong influence on the growth of the body, the sex organs, and especially on the secondary sex characters (virilism in women, hypervirilism in men). The latter occurs even with dystrophy of the gonads.

Endocrine Relations Between Mother and Fetus.—Neurath's patient, a mother of two healthy children, had been subjected to partial thyroidectomy for goiter. Ten months later a child with goiter was born, in an asphyxiated condition, and died. Experiments on rabbits have failed to date, because gestation did not take place in his thyroidectomized animals.

Hypnosis Combined with Narcotics.—Schilder administers to the patient from 0.5 to 1 gm. of barbital two hours before the intended hypnosis, and keeps him from sleeping. Paraldehyd in doses of from 4-10 gm. or amylene hydrate, 4-6 gm., act rapidly, and the hypnosis can be started in a few minutes. Overdoses prevent the rapport by producing real sleep.

Zeitschrift für Kinderheilkunde, Berlin

40: 177-308 (Nov. 13) 1925

*Vitamins and Pasteurization of Milk. W. Blumenberg.—p. 177.
*Caronia's Measles Prevention. E. Nobel and M. Schönberger.—p. 197.
*Diuresis After Concentrated Feedings. Baumecker and Schönthal.—p. 211.
*Familial Polycythemia. M. Kretschmer.—p. 225.
Vegetative System in Infants. Blumenthal and Doxiades.—p. 229.
Action of Muscle Antagonists in Infants. L. Doxiades.—p. 244.
Cow's Milk, Whey and Lactase. H. Davidsohn.—p. 251.
*Whey and Blood Sugar. K. Keilmann.—p. 259.
Resorption of Sugar from Milk. K. Keilmann and F. Rosenbund.—p. 268.
Whey and Evacuation of Stomach. Block and Koenigsberger.—p. 272.
*Whey and Lactosuria. E. Bernhard.—p. 275.
*Whey and Acute Diarrhea. H. Finkelstein.—p. 277.
Growth of Feebleminded Children. A. Rosenblüth.—p. 281.
*Second Infection with Measles. B. de Rudder.—p. 289.
*Feeding Cod Liver Oil to Cows. R. Wagner and H. Wimberger.—p. 295.

Vitamins and Pasteurization of Milk.—Blumenberg found a low vitamin C content in cow's milk.

ished by pasteurization. Half an hour at 63 C. is worse than one quarter of an hour at 85 C. A rapid heating of pasteurized milk just to the boiling point does not impair it any more.

Caronia's Measles Prevention.—Nobel and Schönberger found that Caronia's vaccine used early may protect against measles. They do not claim that the protection is specific. They observed on the ninth and tenth day after the vaccination of the children symptoms which might perhaps be regarded as rudimentary measles.

Diuresis Test After Concentrated Feedings.—Baumecker and Schönthal made diuresis tests on infants fed with concentrated food. One group retained water after even a short period of the thick feedings, another group after a prolonged period, and a third not at all. This third group gained steadily in weight on this diet; the second only temporarily, while the first group responded by losing in weight immediately.

Familial Polycythemia.—Kretschmer observed polycythemia of the Vaquez type in three children in one family (two sisters and one brother).

Whey and Blood Sugar.—Keilmann found that whey retards the hyperglycemia from milk sugar. Casein does not influence it. The action of whey may be due to an inhibition of resorption from the bowel.

Whey and Lactosuria.—Bernhard found that lactosuria occurs with whey with smaller amounts of lactose than with deproteinized whey or water.

Whey and Acute Diarrhea.—Finkelstein concludes from the series of studies made by himself and his collaborators that whey favors abnormal bacterial processes in the intestine. He believes that the reduction of whey in "albumin milk" is an important therapeutic factor.

Second Infection with Measles.—Rudder reports on a child who had measles twice—the diagnosis being as certain as can be required by extreme skepticism.

Feeding Cod Liver Oil to Cows.—Wagner, Wimberger and their collaborators found no increase in the antirachitic value in milk of cows fed for several months with the addition of from 50 to 300 gm. of cod liver oil. Neither was the vitamin A content increased.

Zentralblatt für innere Medizin, Leipzig

46: 1017-1048 (Oct. 24) 1925

Blocking Conduction from Segments of the Spinal Cord. H. Havlicek. —p. 1018.

46: 1049-1064 (Oct. 31) 1925

*Self-Observations on Cardiac Asthma. H. Goldbladt.—p. 1049.

Self-Observations on Cardiac Asthma.—Goldbladt observed on himself and other patients with slight cardiac insufficiency a coincidence of attacks of cardiac dyspnea with swelling of the eyelids. No nephritis was present. Yawning occurred sometimes in the attacks.

Časopis lékařů českých, Prague

64: 1573-1608 (Oct 31) 1925

*Spasms of Constrictors of Larynx. J. Cisler.—p. 1573.
*War Experiences on Getting Chilled. R. Pelikán.—p. 1576.
*Sequels of Cervical Sympathectomy. A. Jirásek.—p. 1580.
Radiotherapy of Cancer of the Esophagus. F. V. Novák.—p. 1584.
*Agglutination and the Bacteriophage in Typhoid. J. Stolz.—p. 1588.
Cleaning of Vaccine Virus. K. Urbánek.—p. 1591.

Spasms of Constrictors of Larynx.—Cisler observed in dogs poisoned with atropin a spasm of the constrictors of the larynx, with the exception of the arytenoid muscles. The only corresponding case in man had been observed by Wiškowský in a neurotic patient.

War Experiences on Getting Chilled.—Pelikán describes his experiences in Russia. In spite of extremely cold weather and sudden changes of temperature (feet near the hot stove and head at the periphery of the car with zero temperatures), there were no diseases attributed to colds. This was observed even on a transport carrying 1,000 insufficiently equipped soldiers for a distance of 4,000 kilometers. Later on, with a sudden change to a tropical climate on the boat, the soldiers exposed themselves freely to drafts. No diseases occurred.

Sequels of Cervical Sympathectomy.—Jirásek observed a hemorrhagic pleurisy, atony of the esophagus and trigeminal neuralgia after extirpation of the cervical sympathetic in a patient with angina pectoris. The pleura had probably been directly injured during the exeresis of the nerve. Irritation of the sympathetic explains the other symptoms.

Agglutination and the Bacteriophage in Typhoid.—Stolz found that the presence of the bacteriophage in the blood does not interfere with the agglutination occurring within two hours. If the flakes become dissolved within forty-eight hours, the bacteriophage is present, and the prognosis is good.

Hospitalstidende, Copenhagen

68: 841-864 (Sept. 10) 1925

*Kidney Tests with Prostatic Obstruction. V. Eskelund.—Begun p. 827.
*Collodion Membranes. Lundsgaard and Holbøll.—p. 849. C'cn, p. 865.

Kidney Function Tests with Hypertrophied Prostate.—Eskelund investigated the influence on the composition of urine and on the diuresis of effectual drainage (retention catheter) in seven cases of prostatic obstruction. In one case the Ambard coefficient and the urea content of the blood showed great improvement, but the excreted thiosulphate dropped from 16.3 to 9 per cent. in a week. Notwithstanding these conflicting findings, the enlarged prostate was removed. The man died from uremia the eleventh day, and the right kidney was found almost totally destroyed with a carcinoma. The urine of only one of the eight patients was still sterile after six days of catheterization; two had been infected beforehand. If drainage is free, the infection is restricted to the bladder, but it extends to the pelvis if the catheter gets obstructed. The thiosulphate test seems especially instructive in estimation of kidney functioning in acute retention, in which the urea content of the blood is more the expression of a temporary suspension of the catabolyzing function rather than of the actual functional capacity of the kidneys.

Standardization of Collodion Membranes.—The membranes were placed in solutions of alcohol of different concentrations, to produce different grades of permeability. The diffusion coefficient drops as the concentration of the alcohol increases. By the simple technic described, collodion membranes can thus be standardized.

68: 865-888 (Sept. 17) 1925

*The Sedimentation Test. I. Freuchen.—p. 871.

The Sedimentation Test.—Within certain limits the diameter of the tube is immaterial for the outcome of the sedimentation test. The reading is most instructive at the half hour and the hour. Freuchen found that ten drops of the 3.5 per cent. sodium citrate solution gave the best results using a glass of 13 mm. diameter, of a capacity of 7.5 c.c. The highest figure he obtained was in a man with pernicious anemia; the figure was 39.5 at the half hour and 42 at the full hour. In blood from twenty horses, tested minute by minute, the greatest differences between the sick and the well were observed at the eleventh minute, sedimentation occurring much more rapidly in horse blood than in human blood.

68: 889-912 (Sept. 24) 1925

*Picric Acid Dermatitis. J. Foged.—p. 889.
*Conservative Versus Operative Treatment of Salpingitis. Andersen.—p. 901.

Picric Acid as a Disinfectant for the Skin.—Foged warns that a universal and protracted dermatitis developed in four of the fifty-two cases in which he used a 5 per cent. alcoholic solution of picric acid for local disinfection of the skin, mostly before major operations. In all the other cases the effect was excellent, confirming the efficacy of picric acid for this purpose.

Salpingitis.—Andersen states that operative treatment of nontuberculous salpingitis gave by far the best results in 500 cases treated by various methods in Rovsing's private clinic or public hospital service. The ultimate outcome has been better in the operative grave and medium cases than in the conservatively treated mild cases.

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THE CLINICAL DIFFERENTIATION OF SPONTANEOUS INTRACEREBRAL HEMORRHAGE AND UREMIA

A FOURTH STUDY OF COMA*

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AND
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In 1915, one of us (E. R. L.) took part in a report[1] designed to help hospital interns and residents in recognizing the causes of coma so frequently dealt with by them as emergencies, especially in large urban hospitals. This was followed by two subsequent reports.[2]

These three reports concern 746 deaths, all with necropsies, and emphasize the infrequency of uremia as a cause of coma and the need for giving due value to the time under observation as an important factor in any discussion of errors in diagnosis. They do not, however, mention the importance of another factor, that death soon after entrance often prevents the examination and study of a puzzling coma by the more experienced attending staff, although in Holcomb's article,[2] this is suggested in a comment on the difference between the correctness of diagnoses made in the examining room and those subsequently made in the wards.

The present report has to do with a much smaller number, only thirty, and is limited to difficulties in distinguishing between spontaneous intracerebral hemorrhage and uremia, and to illustrating the value of the chemical examination of the blood for this purpose.

In the last four years (1921 to 1924, inclusive) at the Cook County Hospital, there have been thirty patients on whom chemical examinations of the blood were made, and death was found at necropsy to be due to spontaneous intracerebral hemorrhage. In nine of these (Group A), the clinical diagnosis was uremia, uremic coma or chronic nephritis; and in only three of these nine was cerebral hemorrhage or thrombosis mentioned as a possibility. For the remaining twenty-one (Group B), the diagnosis spontaneous intracerebral hemorrhage was correct in sixteen; and in five of these twenty-one, the incorrect diagnoses were skull fracture (two), poisoning, meningitis and diabetic coma. Thus, as shown in the accompanying chart, 53 per cent. of the diagnoses were correct, which may be compared with the 51 per cent. in 1915 and the 64 per cent. in 1921 in the reports mentioned.

The length of stay in the hospital for these thirty patients varied from an hour to twenty-two days, the average being about four and one-half days, so that there was usually sufficient time for the study of the illness. The relation between the time in the hospital and the accuracy of the diagnoses is graphically shown in the chart.

There were twenty-four men and six women, with ages from 24 to 77, averaging 51 in Group A, and 49 in Group B, which is significantly low. Nineteen patients were in coma on entrance, seven were semicomatose or stuporous, and four were conscious. In the first group, in which uremia was diagnosed, the average blood pressure was 205 systolic and 115 diastolic; the heart was enlarged in three; heart murmurs were heard in two, and definite palpable arteriosclerosis was noted in one. There was partial or complete hemiplegia in four, and in three no paralysis was found. The pupils were normal in two, and did not react to light in five. Urinalysis was done in eight, and albumin and casts were found in all of these; leukocytes were found in five, and Haines' solution was reduced in one. Wassermann tests of the blood or spinal fluid were made and found to be negative in eight; of the seven in which the spinal fluid was examined, blood was found grossly in six, and was entirely absent in one.

In the other group of twenty-one patients, the blood pressure varied from 125 to 208 systolic, and from 70 to 140 diastolic, an average of 194 and 109, respectively. In fifteen there were evidences of a hemiplegia; in three no paralysis was found. Heart murmurs were heard in two, and enlargement was noted in four. The pupils were normal in three, reacted to light in five, and did not react to light in thirteen. In seventeen urinalysis was done; albumin was found in fifteen, casts in nine and an increase of leukocytes in nine, and Haines' solution was reduced in six. The average specific gravity of the urine was 1.017. Spinal puncture of twenty patients revealed blood grossly in the spinal fluids of eighteen, a positive benzidin reaction in one, and an absence of any evidence of blood in the other. Wassermann tests were positive with two spinal fluids, but negative with the blood of one of these patients, and also negative with the blood of sixteen others so examined.

The alterations found by chemical examination of the blood[3] in Groups A and B are shown in Tables 1 and 2, respectively, and the averages of all cases in

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* From the Cook County Hospital and the Pathological Laboratories of Rush Medical College.

[1] Bissell, W. W., and LeCount, E. R.: A Consideration of the Various Forms of Coma, J. A. M. A. 64:1041 (March 27) 1915.

[2] Bissell, W. W., and LeCount, E. R: The Relative Frequency of the Various Causes of Coma, J. A. M. A. 68:500 (Feb. 17) 1917. Holcomb, Blair: The Causes and Diagnosis of the Various Forms of Coma, a Further Consideration, J. A. M. A. 77:2112 (Dec. 31) 1921.

[3] This work was done by Dr. J. L. Kendall and assistants in the chemical laboratory at the Cook County Hospital.

Table 3. When the figures in these tables are compared with the averages for conditions in the blood in health and in disease (Table 4), it is evident that there is only an occasional patient in whom the increase in the substance sought in the blood at all approaches that found in uremia, and the averages for the whole series (with the exception of the blood sugar) are low in comparison with the estimates usually given for uremia. It is especially noteworthy that the averages with the illnesses wrongly diagnosed uremia are almost the same as the majority of those correctly diagnosed.

Table 1.—*Chemical Analysis (Milligrams per Hundred Cubic Centimeters of Blood) of the Blood for Nine Patients Dying from Spontaneous Intracerebral Hemorrhage with the Clinical Diagnosis of Uremia*

	Non-protein Nitrogen	Urea Nitrogen	Uric Acid	Creatinin	Sugar
Range	34.56 to 49.97	13.07 to 28.02	2.76 to 4.00	1.45 to 1.51	104 to 244
Average	38.84	18.35	3.33	1.49	178

Table 2.—*Chemical Analysis (Milligrams per Hundred Cubic Centimeters of Blood) of the Blood of Twenty-One Patients* Dying from Spontaneous Intracerebral Hemorrhage*

	Non protein Nitrogen	Urea Nitro gen	Uric Acid	Creat inin	Sugar
Range	28.0 to 64.2	7.93 to 46.7	1.58 to 3.16	1.40 to 2.50	101 to 333
Average	36.74	19.85	2.38	1.65	164
Number of cases	13	21	15	20	12

*Sixteen cases were diagnosed correctly

Table 3.—*Conditions in the Blood of Thirty Patients (Milligrams per Hundred Cubic Centimeters)*

	Non-protein Nitrogen	Urea Nitrogen	Uric Acid	Creatinin	Sugar
Range	28.0 to 64.2	7.93 to 46.7	1.58 to 4.00	1.40 to 2.50	101 to 333
Average	37.79	19.10	2.86	1.57	171
Number of cases	18	27	20	26	17
Percentage of increase above normal*	26%	19%	43%	16%	71%
Percentage of increase above normal in uremia*	733%	1,150%	775%	1,370%	50%

* Normal being the averages of the amounts of the various chemical elements of the blood in health as given in a previous reference

Table 4.—*Averages of the Chemical Examination of the Blood in Health and in Uremia**

	Mg per 100 C c. of Blood				
	Non-protein Nitrogen	Urea Nitro gen	Uric Acid	Creatinin	Sugar
Normal	25 to 35	12 to 30	1 to 3	1 to 2	100
Uremia	90 to 250	70 to 300	4 to 27	4 to 33	100 to 200

* From Myers, V C Practical Chemical Analysis of Blood, St Louis, C. V Mosby Company, 1924 p 26 Hawk, P B Practical Physiological Chemistry, Ed 8, Philadelphia, P Blakiston's Son & Co, 1923, p 273

At the necropsies, all were found to have had intracerebral hemorrhages, and free blood was present beneath the leptomeninges in eight. Edema of the brain was noted in ten, and it may be of some significance as regards the symptoms that the illness in only four of these was correctly diagnosed. In two cases the kidneys differed in no way from the normal; a passive hyperemia was noted in nine, retention cysts in four, and cloudy swelling in five. In nine they were described simply as "chronic diffuse nephritis," in seven as small red granular kidneys, in two as primarily contracted, and in two as of the arteriosclerotic type. In twenty cases, or only 67 per cent., were obvious chronic pathologic processes present in the kidneys. The heart in five was normal grossly; in twenty-one there was myocardial hypertrophy; in eleven calcification, sclerosis or other changes in the heart valves, and in six a fibrous myocarditis. The arteries were sclerotic in varying degrees in twenty-three; fatty changes only were found in three, and syphilitic aortitis in four. In one the blood vessels were normal grossly.

In 1915, Bissell and LeCount[1] brought out the mistakes in the diagnosis of the causes of coma in their report of 200 patients who entered the Cook County Hospital, and whose bodies were examined post mortem. Of these, fifty-three died from spontaneous intracerebral hemorrhage, of which twenty-seven cases, or only fifty-one per cent., were correctly diagnosed. Forty-six of the 200 cases were diagnosed clinically as uremia, and in sixteen of these, or 35 per cent., death was the result of cerebral hemorrhage, and in only eight, or seventeen per cent., of uremia. In a similar article[2] in 1917, the same authors published reports of 200 additional patients who entered in coma and died; of the entire 400, death in ninety-five was due to cerebral hemorrhage, and in nineteen to uremia, indicating that in this class of patients the relative frequency of death due to cerebral hemorrhage to that from uremia is about 5 to 1.

In the diagnosis of spontaneous cerebral hemorrhage many so-called "focal" symptoms have been observed, as, for instance, those emphasized by Cumston,[4] dilatation of the pupil, papilledema, ptosis of the upper lid, corneal anesthesia and conjunctival hyperemia, all on the side of the lesion; but these are also often found on the side opposite the hemorrhage, and some of them may be observed in uremia, so that their value is not great. The blood pressure is usually high in both conditions except in the terminal stages. Shaw,[5] in a study of essential hypertension (hyperpiesia), came to the conclusion that all the manifestations of this condition are also encountered in uremia, and that the symptoms of hyperpiesia which simulate uremia are produced by toxins present in the blood as the result of some extrarenal inflammation, rather than to metabolites retained because of disorders of the kidneys. This author and O'Hare[6] have each described a case in which there were clinically high blood pressure and myocarditis (?), and the necropsies revealed spontaneous intracerebral hemorrhage with no renal disease. Williams[7] concludes that there is no relation between the blood pressure and the nonprotein nitrogen of the blood, and that arterial hypertension with normal nonprotein nitrogen blood values and normal kidney excretion does not justify the clinical diagnosis of chronic nephritis. This is of significance because with coma of obscure origin, when there is evidence suggesting a chronic nephritis, it certainly is true that altogether too frequently the results of the chemical examination of the blood are disregarded, and the coma is considered uremia.

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[4] Cumston, C. G: Intracranial Hemorrhage, Internat Clin. **3**: 89, 1917.

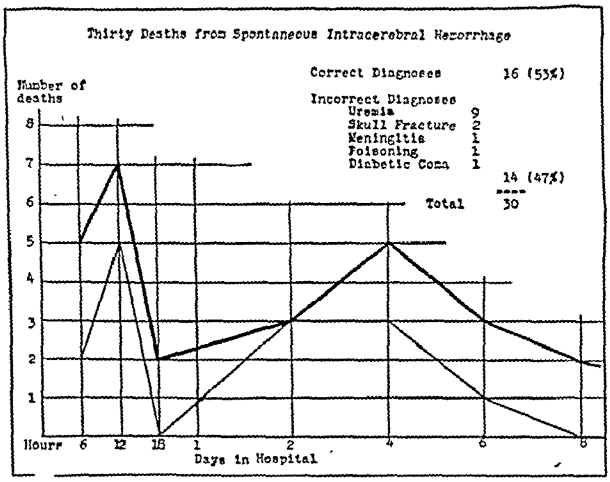
[5] Shaw, H B High Blood Pressure and Relationship to Uremia and Hyperpiesia, Lancet **2**: 1307 (Dec 24) 1921.

[6] O'Hare, J P Case of Vascular Hypertension with Cerebral Hemorrhage and Angina Pectoris, M Clin N. Am **4**: 1767 (May) 1921.

[7] Williams, J L: Total Nonprotein Nitrogen Constituents of Blood in Arterial Hypertension, Arch. Int. Med **27**: 748 (June) 1921

The presence of albumin and casts in the urine is usually and correctly interpreted as evidence of renal disease, or, as Senator[8] has said, "the more closely the kidneys are examined in cases of albuminuria, the oftener are structural changes found," but "it has been noted by a large number of observers that in various pathologic conditions of the nervous system, such as epilepsy, delirium tremens, various psychoses, cerebral apoplexy, nervous exhaustion, migraine, and Basedow's disease, transient albuminuria occurs with or without hyaline casts and sometimes with casts alone, and this in cases where there is no chronic renal disease or passive congestion of the kidneys such as may occur in convulsions." The transient albuminuria occasionally occurs in healthy persons following simply excitement.

Blood is usually found in the spinal fluid with intracranial hemorrhage, but may not be present when the lesion is deeply located. However, if the fluid is examined about three days after the "stroke," it usually has a canary-yellow color which often persists for months, although the ordinary tests for blood remain negative.[9]



Correct and incorrect diagnoses in thirty deaths from spontaneous intracerebral hemorrhage: Heavy line, deaths; light line, number correctly diagnosed. Three deaths not plotted occurred: one on the twelfth, and two on the twenty-second day; two of these were correctly diagnosed.

Volhard and Fahr[10] believe that the name uremia should be applied only when symptoms are observed of true urinary poisoning with definite evidence of serious impairment of the kidneys, the diagnosis to be made from the symptoms and results of laboratory studies. According to McElroy,[10] such laboratory examinations demonstrate a "marked retention of the residual blood nitrogen and urea, a low specific gravity of the night urine, a low fixed specific gravity of the day urine, low salt and nitrogen concentration, a low phenolsulphonephthalein excretion, a low urea index, a high Ambard coefficient, and increased osmotic tension[11] of the blood. But in addition to these more or less typical pictures, there is a smaller number of cases in which functional kidney tests give very variable results in the different manifestations of uremia. In the convulsive attacks associated with the acute and second stage of diffuse glomerulonephritis, and . . . with the hypertension of sclerotic conditions, there is usually very little evidence of kidney insufficiency as indicated by the tests now generally used. In such cases, the nonprotein nitrogen and urea in the blood are within normal limits." These two constituents of the blood are usually in about the relation of 2 to 1; that is, the urea nitrogen constitutes about 50 per cent. of all the nonprotein nitrogen of the blood in health, whereas with retention such as is observed in the so-called chronic interstitial nephritis, the urea nitrogen may be as much as 75 or 80 per cent.

CONCLUSIONS

The following conclusions pertain simply to the condition observed in this series of thirty deaths from intracerebral hemorrhage:

1. No patient dying from intracerebral hemorrhage with the clinical diagnosis of uremia had a nitrogen retention comparable to that of true uremia.
2. In spontaneous intracerebral hemorrhage, the increase above the normal of the various nitrogenous elements of the blood varied from 16 to 43, the creatinin (16 per cent.) being the least increased, and the uric acid (43 per cent.) the most.
3. In 67 per cent. of the thirty, the gross changes in the kidneys indicated some chronic disease; in 7 per cent., no gross changes of any kind were found.
4. The presence of blood in the spinal fluid and the great increase in the nitrogenous elements in the blood are apparently the two most important factors in the differential diagnosis between uremia and spontaneous intracerebral hemorrhage.

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[8] Senator, H.: Diseases of the Kidney, in Nothnagel's System of Medicine, Philadelphia, W. B. Saunders Company, 1905, p. 41.

[9] Harris, W.: Diagnostic Value of Lumbar Puncture in Cerebral and Spinal Hemorrhage, Brit. M. J. **1**: 635 (April 22) 1922.

[10] Volhard and Fahr, cited by McElroy: in Diseases of the Kidneys, Tice's System of Medicine, Hagerstown, Md., W. F. Prior Company, Inc. **6**: 570, 1925.

[11] This is contradicted by Schade and Claussen (Der onkotische Druck des Blutplasmas und die Enstehung der renal bedingten Odeme, Ztschr. f. klin. Med. **100**: 363, 1924), who have found that lessened osmotic pressure of the blood due to alterations in the protein content ("hypoonkie") is a specific symptom of nephritis with edema.

TREATMENT OF SEPSIS WITH MERCUROCHROME-220 SOLUBLE

REPORT OF NECROPSIES IN FIVE CASES *

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In the last few years a new antiseptic, mercurochrome-220 soluble, has been placed on the market, and considerable literature extolling its virtues has accumulated. Only two or three meager articles have come to my attention reporting unfavorable symptoms following the intravenous administration of this preparation and advising more caution and control in its application.

During the past year the following five cases, in which mercurochrome was administered intravenously during life, came to necropsy in the chief medical examiner's department of the city of New York, and showed, among other anatomicopathologic changes, the lesions of mercurial poisoning:

Case 1.—*History.*—Mrs. A. S., aged 36, white, was admitted to the hospital, March 31, 1924, with a history of having had the uterus opened to induce abortion, and of taking a large amount of various abortifacients. The chief symptoms, on admission, were pain in the lower part of the abdomen, vaginal bleeding, nausea and fever; the temperature on admission was 102 F.; the pulse, 96. Blood examination revealed white blood cells, 14,800; polymorphonuclears, 87 per cent.

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* Read at the Thirty-Seventh Annual Meeting of the American Association of Genito-Urinary Surgeons, Washington, D. C., May 4, 1925.

* From the pathologic laboratories of Bellevue Hospital, Dr. Douglas Symmers, director, and the Office of the Chief Medical Examiner of the City of New York, Dr. Charles Norris, *chief medical examiner.*

April 3, the blood culture was positive for *Streptococcus hemolyticus* (2 colonies per cubic centimeter). Gentian violet was administered without beneficial effect. Blood cultures were positive for *Streptococcus hemolyticus,* April 13, 19, 24 and 28, there being, respectively, 6, 10, 14 and 20 colonies per cubic centimeter. April 25, 35 c.c. of a 1 per cent. solution of mercurochrome was administered; similar quantities were given, May 9 and May 11. May 12, 20 c.c. was administered, and again, May 14, 35 c.c.. No change was apparent following the administration of mercurochrome, either in temperature or in the course of the illness, save for a discoloration of the skin. The urine at various times contained albumin, pus and red blood cells. Death occurred May 15.

Necropsy.—The peritoneal cavity contained about 50 c.c. of dark straw-colored fluid. The left pleural cavity was about one third filled with free, bloody, serofibrinous fluid. The kidneys were large and swollen; on section, the cortex was very pale and the medulla deeply injected; the capsule was free, the surface smooth and pale yellowish; the pelves, ureters and urinary bladder were normal. There were extensive adhesions about the loops of the small intestine opposite the lower right abdominal quadrant, where it was firmly attached to the wall. The mucous membrane of the small intestine was natural in appearance, the upper portion being filled with yellowish bile-stained fluid. The cecum and ascending colon were enormously distended with gas; the mucosa showed elevated reddish rugae and, in places, a distinct granular appearance. The mucous membrane of the transverse and descending portions showed grayish and granular areas with superficial ulcerations. The same was true of the lower portion of the rectum, namely, that portion above the anal canal (suggestive of mercuric chlorid). The other organs showed nothing worthy of note.

The anatomic diagnosis was: serohemorrhagic pleuritis (left); collapse of the left lung; splenomegaly; infarction of the spleen; necrosis of the spleen; ulcerative and exudative colitis; acute parenchymatous nephritis; parenchymatous degeneration of the viscera; sepsis.

On histologic examination, the kidneys showed degeneration of the renal parenchyma, with hemorrhage, fatty infiltration and calcium deposits in the descending tubules. The ulcers in the intestine showed necrosis of the surface epithelium, with round-cell infiltration at the margins and diffuse edema and hemorrhagic extravasation.

Case 2.—*History.*—Mrs. M. A., aged 26, colored, who was admitted to the hospital, June 7, 1924, had had an abortion performed three weeks prior to admission. The patient developed pain over the lower part of the abdomen, chills and fever. On admission, her temperature was 102 F.; pulse, 104; respiration, 24; the blood culture was sterile; albumin and a few pus cells were found in the urine. June 11, 20 c.c. of a 1 per cent. solution of mercurochrome was given intravenously, after which the patient developed severe diarrhea, lasting two days, and albumin, pus, casts and blood cells were present in the urine. June 17, 20 c.c. of a 1 per cent. solution of mercurochrome was administered intravenously; the patient at once developed severe chills, and shortly thereafter diarrhea, which persisted until death, June 18. The blood culture at this time was sterile.

Necropsy.—The pelvic cavity showed a small amount of purulent material with a few flakes of fibrin, and the lower portion of the ileum showed discolorations and soft areas covered by fresh fibrin. The abdominal cavity contained a small amount of fluid, which was slightly cloudy and tinged yellow. The liver weighed 2,080 gm.; a cut section showed small yellowish mottled areas, suggestive of focal necroses. The gallbladder contained dark greenish, ropy bile, and the mucous membrane was normal. The kidney capsule was stripped with some difficulty. The surface was studded with small hemorrhages. The kidney substance was mottled; the markings were very irregular and the pyramids slightly violaceous. The pelves and ureters showed no changes. The combined weight of the kidneys was 360 gm. The uterus measured 3½ by 2⅝ by 1⅝ inches. On section, the mucous membrane was covered with a blood clot and was injected; the sinuses were somewhat enlarged, but there was no evident perforation. The stomach was normal. The small intestine was normal as far down as the last half of the ileum, where there were injected areas. The last foot of the ileum showed distinct ulcers, covered with greenish slough, and the wall of the ileum was thickened. The upper portion of the large intestine and the lower portion of the sigmoid showed petechial hemorrhages. The rectum presented ulcers similar to those found in the ileum; namely, irregular, serpiginous ulcers, covered by greenish slough. The other organs showed nothing of interest in the present connection.

The anatomic diagnosis was: septic pelvic peritonitis secondary to abortion; ulcerative enteritis and colitis; cardiac hypertrophy; bronchopneumonia; acute diffuse nephritis; sepsis.

Histologic examination of the kidney showed intense parenchymatous degeneration, with necrosis, round-cell infiltration, hemorrhage and edema. The intestine showed necrosis and degeneration of the surface epithelium, and replacement by edematous and necrotic slough. The deeper portions of the intestinal wall were edematous and showed dense collections of nuclear débris and, in places, hemorrhagic extravasation.

Case 3.—*History.*—M. M., a white woman, was admitted to the hospital, Sept. 24, 1924, with a diagnosis of septic abortion (spontaneous) ten days before admission, followed by chills, fever and abdominal pain. September 25, 20 c.c. of a 1 per cent. solution of mercurochrome was given intravenously at 8 p. m., followed by chill and a rise of temperature to 104.6 F., with a subsequent fall to 101.4 F.; four very loose stools were passed during the night. September 26, at 8 p. m., 1 c.c. of typhosus serum was given intravenously for foreign protein, followed by chill; an alcohol sponge was given. The temperature dropped to 99.6 F. within a few hours. Previous to September 27, the patient had been irrational and semicomatose, but on that day, for the first time, she was conscious and talked intelligently. At 7 p. m. of the same day there was a sudden onset of coma, with frothing at the mouth; the left pupil was widely dilated, the right not markedly so, both pupils reacting to light; the knee jerks and elbow reflexes were equal and active. The patient died within one hour, without regaining consciousness. A blood culture taken, September 25, previous to the administration of mercurochrome, was sterile; another, taken, September 26, after mercurochrome therapy, was likewise sterile. September 26, the stools showed the presence of blood. The urine contained pus and blood, but no casts.

Necropsy.—The pericardial cavity contained yellowish, cloudy fluid. The parietal and visceral layers of the pericardium were rough and covered with a shaggy exudate. The kidneys were large, weighing 410 gm.; the capsule was stripped with some difficulty; the cortex was wide and pale; the pyramids, violaceous; the pelves and ureters were stained yellowish but were otherwise normal. Watery, blood-stained fluid was present in the large intestine, the mucous membrane being markedly injected in some places, other portions showing raised, greenish gray ulcerations and marked thickening of the bowel and the whole being stained reddish. The scalp, calvarium and meninges were normal. The left hemisphere was much softer than the right, and the markings between the gray and white matter were not as sharp as on the right side. Careful search revealed a formed embolus in the middle cerebral artery on the left side, just above the bifurcation of the carotid and anterior to the middle third. The base of the skull was normal. The other organs showed nothing of interest in the present connection.

The anatomic diagnosis was: embolus, left middle cerebral artery; acute septic valvulitis, involving the aortic valve; anemic infarct of the heart muscle; anemic infarct of the left kidney; septic spleen; parenchymatous degeneration of the heart muscle, liver and kidney; ulcerative colitis; septic endometritis; corpus luteum, left ovary; acute pericarditis; pyopericardium; mercurochrome staining of the viscera; sepsis.

On histologic examination, the kidneys showed a diffuse parenchymatous degeneration, with fat deposition and extensive calcium degeneration of the descending tubules. The colon showed superficial ulcerations with epithelial necroses and an edematous slough. The remainder of the wall showed intense edema, hemorrhagic extravasations and granular débris.

CASE 4.—*History.*—T. P., a white man, was admitted to the hospital, Nov. 1, 1924, in delirium, with an infected right hand, spasticities, a temperature of 103.2 F., pulse 96, and respirations 26. The urine contained albumin and a few hyaline casts, but no pus or blood cells. The hand infection was treated by incisions and drainage; a culture of the wound showed the presence of streptococci. November 4, blood culture was positive for streptococcus, and on the same day 20 c.c. of a 1 per cent. solution of mercurochrome was administered intravenously, followed in one and one-half hours by a severe chill and an elevation of temperature to 105 F. On the following morning, the temperature receded to 101.2 F. and severe diarrhea developed, which persisted until death, November 19. The patient's general condition showed no improvement. He presented quite marked puffiness of the eyelids and the urine gave a marked reaction for albumin, many hyaline and granular casts, and numerous pus and blood cells. November 15, 20 c.c. of a 1 per cent. solution of mercurochrome was given intravenously, the reaction on this occasion being less marked than on November 9. November 17, the blood culture was positive for streptococci (from 20 to 30 colonies per cubic centimeter of blood).

Necropsy.—Externally there were no injuries, except for two operative incisions on the dorsum of the right hand. The deep tissues were necrosed, and the muscle was deep red and infiltrated with pus; no thrombosis was noted in the surrounding vessels. The right pleural cavity contained purulent fluid, and the right lung was covered with fresh fibrin over the base, and was injected; the cut surface was congested. The left lung was free and the cut surface normal, except for three or four small abscesses on the surface. The pericardial sac was distended by purulent fluid, and both the parietal and visceral layers of the pericardium showed a shaggy membrane. The valves were normal; the musculature was normal, except for a small abscess cavity in the fat of the apex, not involving the muscle; the fossa ovalis was closed. The kidneys were large and swollen; the markings were somewhat obscured. The cortex was pale yellowish pink, and the pyramids were deep purplish red; the pelves were injected. The esophagus was normal. The stomach contained yellowish fluid. The mucous membrane was normal. The small intestine contained the usual chyme; the mucous membrane was normal. The large intestine contained fluid greenish material; the mucous membrane from the ileocecal valve through to the rectum showed superficial ulceration and necrosis, resembling mercuric enteritis. The brain showed a purulent exudate covering both hemispheres, most marked on the left side and extending into the medulla and spinal cord; smear of the pus showed many streptococci. The other organs showed nothing of interest in the present connection.

The anatomic diagnosis was: acute suppurative pericarditis; acute suppurative pleurisy (right side); acute suppurative meningitis; abscess of the lung and pericardium; cellulitis of the right hand; acute ulcerative colitis; acute nephritis.

On histologic examination, the kidney showed intense parenchymatous degeneration, marked injection of the vessels, fatty infiltration of the cells and some calcium degeneration. The colon showed erosions of the epithelium, localized ulceration and edema, and degeneration of the submucosa and muscularis, with extensive nuclear débris.

CASE 5.—B. G., a white woman, aged 36, was admitted to the hospital, Nov. 17, 1924, with the diagnosis of septic abortion, resulting from the self-introduction of an orange-wood stick six days prior to admission. During her stay in the hospital, the temperature ranged from 104 to 105 F., the pulse from 105 to 130, and the respirations from 26 to 48. The white blood cells numbered 15,600; polymorphonuclears, 88 per cent. The urine contained albumin, an occasional cast and pus cells. November 18, the blood culture was positive for *Streptococcus hemolyticus* and *Staphylococcus aureus.* November 19, 20 c.c. of a 0.5 per cent. solution of mercurochrome was given, and on the following day a similar amount was administered. Blood culture taken after the latter injection was still positive, and the urine contained albumin, pus, many casts and red blood cells.

The patient died, Novemebr 21.

Necropsy.—Puncture wounds were noted in the left and right cubical fossae, under the breasts. The vaginal orifice was wide, admitting three fingers with ease; a brownish discharge escaped from it. Milk could be expressed from the breasts. On section, no free fluid was present in the peritoneal cavity; the diaphragm reached the fourth rib on both sides. The heart weighed about 400 gm.; the pericardium showed a number of petechial hemorrhages. The mitral valve was thickened from an old mitral valvulitis and, in addition, showed fresh vegetations; the rest of the valves were normal; the fossa ovalis was closed. The spleen was large, weighing 300 gm.; on section it showed a large infarct, with softening in the center of the infarct. The kidneys were large, weighing 428 gm.; the capsule was stripped with some difficulty. The surface was studded with small abscesses, surrounded by hemorrhagic zones. On section, the cortex was pale yellowish, with deeply injected medulla; the pelves and ureters were normal. The uterus measured 4 by 3 by 2½ inches; there were two grayish punctate marks on the anterior lips of the cervix, probably tenaculum marks. The tissue of the internal os was greenish and necrotic. In the cavity of the uterus was a placental site on the superior wall, covered by a fresh, green, necrotic slough. The walls of the uterus were thick and the sinuses dilated. The left ovary showed a large corpus luteum cyst, measuring 1 inch in diameter, filled with clear fluid and surrounded by a lutein zone, ⅛ inch in diameter. The stomach contained brownish fluid; its mucous membrane was normal. The small intestine contained the usual chyme and feces; the mucous membrane was normal throughout, except for punctate hemorrhages here and there. The cecum was intensely injected, hemorrhagic and stained yellowish red; the lower colon showed a half dozen superficial ulcerations. The other organs showed nothing of interest in the present connection.

The anatomic diagnosis was: acute and chronic mitral valvulitis; infarcts of the spleen; septic endometritis; acute colitis; acute nephritis; miliary abscesses of the kidneys.

Histologic examination revealed a slough over the erosions in the colon, edema, some polynuclear and round-cell infiltration, and hemorrhage. The kidneys showed parenchymatous and fatty degeneration, focal abscesses and marked congestion.

COMMENT

These five cases represent the first of a series that came under observation in the chief medical examiner's office. Since these cases all showed strikingly similar lesions, both in the kidneys and in the colon, the chief medical examiner has performed postmortem examinations on all cases reported to his department in which mercurochrome has been used, with the result that he has accumulated a series of twelve cases, all of which showed evidence of renal and colon involvement.

In the five cases here presented, it is our opinion that mercurochrome induced the intense nephritic and intestinal lesions and thus contributed to death. Chemical analysis of all the viscera in these cases, made by A. O. Gettler,[1] pathologic chemist to Bellevue Hospital and toxicologist to the chief medical examiner of New York, showed mercury in even larger amounts than were found in mercuric chlorid poisonings, a fact indicating the marked toxicity of this drug and justifying the opening statement.

It may be argued that cases have been reported in which the drug was used successfully, although a temporary nephritis and colitis did accompany its use, and hence the lesions could not be of moment. To this, it may be answered that in cases of mercuric chlorid poisoning with nonsecreting kidneys and severe colitis patients do recover and the kidney and the colon are apparently restored to normal, though subsequently these cases show a chronic nephritis, a factor that has not as yet been determined in mercurochrome cases.

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[1] Gettler, A. O.: To be published.

From the meager cautioning literature, and the unfavorable cases that are everywhere discussed but not published, it is evident that the dangers of the drug have not been brought sufficiently to the fore. Locally, mercurochrome probably is a very good antiseptic; systemically, it may possibly be of value in selected cases when properly administered and controlled, though its indiscriminate use, for example, in such conditions as acute rheumatic fever or malaria, should not be countenanced. That its dangers are constanly to be borne in mind is apparent from the foregoing case reports, in that mercurochrome in its therapeutic dose not only exhibited no curative effect, but produced lesions associated with a toxicologic agent, and the margin of safety between a therapeutic and a toxic dose must be variable and small indeed.

MANGANESE POISONING AND ITS EFFECT ON THE CENTRAL NERVOUS SYSTEM

REPORT OF SIX CASES *

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My attention was recently attracted to the subject of managanese poisoning when I was consulted by a patient who was suffering with a malady, the clinical picture of which was not at all familiar to me. The condition was obviously the result of a disease of the central nervous system, but it fitted no classic picture of a well recognized syndrome. In view of the fact that the patient had worked for several months in a manganese grinding plant, the possibility of manganese poisoning was considered. The descriptions available of this disease agreed so well with the subjective and objective symptoms of the patient under consideration that this diagnosis was made, but with some hesitation. Later, the wife of the patient volunteered the information that she knew of several other workers in the same manganese grinding plant who suffered similarly. Forthwith, a trip was made to the neighborhood of this grinding plant in Virginia, and five similar cases were found.

HISTORY

In looking up the subject, one is surprised that there are so few cases of manganese poisoning recorded and that so little has been written about the disease. Couper,[1] in 1837, first described the disease among workmen who handled manganese dioxid in the manufacture of chlorin for bleaching powder. The description of the symptoms of his patients was very similar to those in my series. In 1901, von Jaksch[2] described three cases that he considered atypical types of disseminated sclerosis in workmen employed in manganese grinding plants. He attributed the disease to a manganese toxicosis. Embden,[3] Friedel,[4] Seiffer[5] and Seelert[6] noted the disease and described cases similar to those already reported. Von Jaksch,[7] in 1907 and 1910, reported other cases. In all, only fifteen cases have been reported to date in the European literature.

In 1913, Casamajor[8] reported nine cases, the first ones to be recorded in America. In 1919, Edsall, Wilbur and Drinker[9] completely summarized the literature and reported in detail several of their cases. In 1922, Davis and Huey[10] added two cases to those already recorded.

With the exceptions of Couper's five cases and four of von Jaksch's, all of the cases reported have been caused by inhalation, or swallowing in the saliva, of manganese dust in grinding plants. Von Jaksch[7] states that no new cases developed when the dust was abolished, and it is his belief that the lung is the portal of entry, the manganese later entering the nervous system probably as an albuminate.

My six patients had all been in contact with an atmosphere heavily laden with fine manganese dust for periods varying from three to ten months. Not *until recently had any precaution been taken to protect* the men working in this mill. After several cases of suspected poisoning had developed, the operators of the plant had provided the workmen with masks, but as they were uncomfortable, the masks were seldom worn. Dust collectors were provided in the mill, but they were entirely inadequate to collect the dust produced in the process of grinding the ore.

PATHOLOGY

Little is known of the exact pathology of the disease. There were no postmortem examinations in any of the foreign cases; in fact, there is no report in the literature of the disease, per se, ever having been fatal. Casamajor[8] reported a necropsy on one patient with manganese poisoning who died of pneumonia. He noted no gross changes in the brain or cord but stated that he found the longitudinal fibers of the pons degenerated. Unfortunately, no mention was made in the report of this necropsy of the microscopic appearance of the corpus striatum. It is my belief, based on clinical findings and the experimental work of Mella,[11] that the central nervous system lesion of manganese poisoning is probably in this location. The similarity of the poisoning to Parkinson's disease and to Wilson's syndrome is striking. Stocker[12] states that in making the diagnosis of Wilson's syndrome (progressive lenticular degeneration) one must be careful that the patient has not worked in manganese, as the poisoning from this element strikingly resembles such a condition.

Mella,[11] in an experimental study of poisoning by manganese in monkeys, found a clinical picture that he attributed to lesions of the basal nuclei. Histologic examination in his cases showed definite changes, particularly in the corpus striatum and globus pallidus.

SYMPTOMS

The clinical picture of chronic manganese poisoning is such a striking one that, when once seen, it is hard to confuse with other diseases of the central nervous system. The initial symptom in three of my six patients was disturbance of gait and in two of the remaining patients this was the second manifestation. In each of the patients the following symptoms were invariably found: nervousness; weakness and fatigue; disturbed gait with retropulsion on arising and propulsion on walking, and causeless laughter with silly conduct and expression. Paresthesias were noted as an early complaint in four cases; intention tremor of the hands, in five; monotonous speech, in five; awkward, clumsy movements of the extremities with loss of the finer movements of the hands, in four; masked expression, in four; a loose-hanging lower jaw, in three; an infrequent, deep inspiratory sigh, in three, and lethargy, in two. Abnormal mental symptoms were observed in every patient, mostly of personality, and in only one case were intellectual aberrations observed. Irritability, lack of sociability, tearfulness and mild exaltation were the outstanding changes. Two of the patients became suspicious, without cause, of their families and friends. The organic neurologic findings were almost uniform, the gait was altered in every case, the station was unsteady and the deep tendon reflexes were increased over the normal in the majority. Intention tremor of the hands and increased muscle tone were found together with masked expression and monotonous speech. None of the patients showed pathologic plantar reflexes, objective sensory changes, atrophy or edema. The pupils were not altered in size, shape or reaction. The fields of vision were normal as well as could be detected by a rough examination. Intra-ocular examination showed definite pallor in one case and a very reddened vascular retina in another. No involvement of the cranial nerves was noted except suspicious weakness of the facial nerve in one patient and the drooping lower jaw, in three.

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[1] Couper: J. de clin. méd., de pharm. et de toxicol. **3:** 223, 1837.

[2] Von Jaksch, R.: Wien. klin. Rundschau 1901, p. 729.

[3] Embden, H.: Deutsch. med. Wchnschr. **27:** 795, 1901.

[4] Friedel: Ztschr. f. Med. Beamte **15:** 614, 1903.

[5] Seiffer: Berl. klin. Wchnschr. **41:** 370, 1904.

[6] Seelert, H.: Monatschr. f. Psychiat. u. Neurol. **34:** 82, 1913.

[7] Von Jaksch, R.: München. med. Wchnschr. **54:** 969, 1907; Die Vergiftungen, 1910, Vienna and Leipzig, p. 231.

[8] Casamajor, Louis: An Unusual Form of Mineral Poisoning Affecting the Nervous System: Manganese? J. A. M. A. **60:** 646 (March 1) 1913.

[9] Edsall, D. L.; Wilbur, F. P., and Drinker, C. K.: J. Indust. Hyg. **1:** 183 (Aug.) 1919.

[10] Davis, G. G., and Huey, W. B.: J. Indust. Hyg. **3:** 231 (Dec.) 1922.

[11] Mella, Hugo: Experimental Production of Basal Ganglion Symptomatology in Macacus Rhesus, Arch. Neurol. & Psychiat. **11:** 405 (April) 1924.

[12] Stocker, W.: Ztschr. f. d. ges. Neurol. u. Psychiat. **15:** 251, 1913.

Peripheral neuritis is a frequent symptom of poisoning from various metals, and it is possible that there may be some neuritic involvement in these cases. This may be suspected in view of the fact that four of the patients examined complained of paresthesias of the extremities, and in two of them actual pain was described. Against this belief is the activity of the tendon reflexes, the absence of objective sensory changes and muscular atrophy, and the character of the pain.

An interesting feature of the investigation of these patients was that the operators of the grinding plant and a few people in the community were of the opinion that the symptoms were due to the drinking of corn whisky and fermenting cider. Adjacent to the manganese mill was a vinegar plant, and it was stated that the mill workers would steal the fermenting cider and become intoxicated by it. One of the patients reported here had been sent to one of the state insane hospitals as an alcoholic, and his condition while there also was thought to be due to the use of alcohol. It is a fact that, with one exception, each of these patients drank rather heavily, at one time or another, while in contact with the manganese dust. In studying the case reports, however, it will be noted that Patient 5 developed symptoms of poisoning after being in contact with manganese dust for a shorter period of time than the others; but from his own statements, from the statements of his physician and from other reliable sources, the information was gained that he had never used alcohol in any form as a beverage. There is nothing to convince me that alcohol played any part in the symptom complex here presented. Certainly, I have never observed or seen reported, either in acute or in chronic alcoholism, a description that would fit the picture of these cases.

REPORT OF CASES

Case 1.—*History.*—A white man, aged 35, who had been a farmer prior to working in a manganese grinding plant, where he was employed from March until December, 1924, was in constant contact with the manganese dust and not until September did he wear a mask for protection. His family history was negative except that one brother had symptoms similar to those of which the patient complained, and he also had worked in the same manganese plant.

The past history was negative except for a slight attack of influenza in 1918, and there was no record of venereal disease. The patient's habits were good except that he had not slept well since working in manganese and during this time he drank corn whisky rather heavily. In July, 1924, he first noticed that he was nervous, unable to sleep, and had a sense of falling forward when walking, and on arising had a tendency to stagger backward. There were paresthesias in the arms and legs, and aching pain in the right arm and leg. He developed a slow, monotonous speech, and there was some loss of the fine movements of the hands, more noticeable on the right. The patient developed tremor of the hands, which was more perceptible on movements of intention. His memory was impaired; he became mentally confused at times, was silly, was constantly smiling and would laugh without cause. Occasionally there was vertigo. The general physical examination was entirely negative except that he showed evidence of pyorrhea alveolaris.

Neurologic Examination.—The patient had a slight sway in station, showed a tendency toward propulsion in walking and noticed that the movement of the right leg was awkward. On arising, he would tend to fall backward. The deep reflexes were exaggerated, and there were no pyramidal tract signs. There was a fine tremor of the extended fingers and definite intention tremor of both hands; sensation was normal. Speech was slow and monotonous, and there was a masked, stolid expression. The pupils were equal, regular and reacted promptly; there was no nystagmus. The cranial nerves were intact. The fundi showed no changes, and the vision fields were not restricted, as tested by rough examination.

At the time the patient left the manganese plant, his wife stated that he showed definite confusion. He was asocial, listless, could not sleep, dreamed a great deal and frequently would scream out in his sleep. He was emotionally disturbed and this was manifested by tearfulness, irritability and a constant, causeless laughter. At the time of examination, he showed no mental symptoms other than silliness, tearfulness, lack of sociability and the causeless laughter.

Case 2.—*History.*—A youth, aged 18, whose family history and past history were relatively unimportant, had worked in a manganese grinding plant where he was in constant contact with the dust for four of the seven months (January to August, 1924) that he was employed.

Before going to work in this plant he drank heavily, but while employed there he drank considerably less. He dates the onset of his symptoms from July, 1924. The first complaints were general weakness and slowing up of the gait, lethargy, dribbling of saliva and hanging of the lower jaw. His gait became progressively worse, and he noticed that he was dragging the left leg. Shortly after this, he became very nervous. His expression became silly; he developed the typical causeless laughter and a monotonous speech. Later, there appeared an intention tremor of the hands, propulsive gait and retropulsion on standing, and frequent long inspiratory sighing. He also developed numbness and tingling in the arms, hands and feet. The general physical examination was negative except for large, infected tonsils.

Neurologic Examination.—There was slight sway in station, awkward gait with spasticity of the right leg, and a rising movement of the right heel. His posture was slightly stooped. There was exaggeration of all the deep reflexes and increase in muscle tone in both legs. No pyramidal tract signs or ataxia could be elicited. There was a slight intention tremor of both hands. The speech was slow, was monotonous and at times suggested the bulbar variety. The pupils showed no changes, and there was no diplopia or nystagmus. The fundi, vision fields and cranial nerves were normal. There was a loss of the finer movements of the hands, which was particularly noticeable in writing.

Case 3.—*History.*—A man, aged 28, night superintendent of a manganese grinding plant, was in more or less constant contact with the dust for about ten months. The family history was negative. The past history showed nothing of importance except that the patient had a mild case of influenza in 1918 and three attacks of quinsy. He had overindulged in the use of alcohol and drank heavily before working in the manganese mill, but during that time he drank considerably, though less heavily.

He dated the onset of his symptoms to August, 1924, at which time there was a slowing up of his speech. He had been working in manganese for about eight months. He then developed uncontrollable, causeless laughter, then slowing up of his gait and dragging of the feet, generalized muscular weakness, particularly in the legs, and a sense of retropulsion on arising. He became nervous and irritable, and had flare-ups of temper and a frequent sighing noise made with long inspiration. There was dribbling of saliva and drooping of the lower jaw. The general physical examination was negative except for infected tonsils and slight thyroid hypertrophy.

Neurologic Examination.—The patient showed a definitely masked expression. His station was steady, the gait was slow and awkward with a tendency to propulsion, and there was some retropulsion on arising. The deep reflexes were all exaggerated. There were no pyramidal tract signs, but the muscle tone was generally increased, the posture was stooped and the finer movements of the hands were clumsy. There was a slight intention tremor of the hands and a coarse tremor of the lips and lids. The lower jaw tended to droop. Speech was slow and monotonous, and enunciation was poor. The pupils showed no change from the normal; there was no diplopia or nystagmus. The fundi and vision fields showed no changes, and the cranial nerves were intact. Mentally, the patient revealed no memory defect; he was somewhat emotional, as shown by irritability and causeless laughter and lack of sociability. There were no other mental symptoms.

Case 4.—A boy, aged 17, with a negative family history and an unimportant past history which showed no diseases other than mild influenza in 1918 and occasional tonsillitis, said he had drunk a considerable amount of whisky during the time he was working in manganese; otherwise his habits were good.

The patient dated the onset of his illness to July, 1924. He had worked in the manganese grinding plant since January of the same year. The first symptoms noticed were lethargy and difficulty in using the legs, with marked weakness over the entire body, especially in the lower extremities. There developed staggering in walking, some headache, and the personality changes of irritability, causeless laughter and mental exhilaration with verbosity. He became nervous, had outbursts of temper, and developed a frequent sighing noise on long inspiration. Later, his gait became more involved, and there was a propulsion in walking and retropulsion on arising. There were marked tremors of the extremities, which were increased on intention, and he developed paresthesias of the extremities. A general physical examination was negative except for infected tonsils and teeth.

Neurologic Examination.—The patient had slight sway in station, slow, awkward gait and a tendency to stagger. The deep reflexes were exaggerated, and there was a general increase in muscle tone. The finer movements were clumsy; this was especially noticed in writing. There was head nodding and tremor of the legs, face and tongue and some intention tremor of the hands. There was no masked expression. Speech at the time of examination appeared normal, but his mother described a slow, monotonous speech formerly. The pupils showed no changes, and there was no diplopia or nystagmus. The eye grounds exhibited marked pallor of the optic disks, especially of the temporal halves; this appeared to be more than the normal temporal pallor. On rough examination, the vision fields showed no changes. There was suggestive left facial weakness; otherwise, no cranial nerve involvement was noted. Mental examination revealed some emotional changes, with irritability and causeless laughter. The patient was also slightly elevated, though somewhat asocial.

Case 5.—*History.*—A man, aged 47, married, and the father of three healthy children, gave a negative family history, and had never been sick prior to the time he came in constant contact with manganese dust in this grinding plant. He began work in January, 1925, and worked there three months. He wore a mask part of the time but stated that it was uncomfortable and he did not feel it necessary to protect himself.

The patient's habits were very good. He never indulged in the use of alcohol. He noticed within fifteen days after going to work in this plant that he would stagger forward or backward, and when sitting would have a sensation of falling backward and on arising would have slight retropulsion. He became nervous, irritable and, at times, happy, jovial and slightly elevated. He noticed that he became weak and would tire easily; his memory was impaired, and there were some paresthesias of the hands and feet. A general physical examination was negative except for pyorrhea alveolaris.

Neurologic Examination.—The patient had a slight sway in station, unsteady gait with propulsion in walking, and some retropulsion on rising. The deep reflexes were present but not exaggerated, and there were no pyramidal tract signs, no change in muscle tone, no incoordination. The skin reflexes were active and equal; there was no tremor and no sensory change. No change in speech was noticed, but there was a silly facial expression. The pupils were entirely normal, as were the fundi, vision fields and cranial nerves. Mentally, the patient had recently begun to show some suspiciousness of his wife and children, his memory became impaired, and he showed a slight elevation, silly conduct, a happy, carefree expression and causeless laughter. He was decidedly more jovial and playful than when in his usual health, for his wife stated that he was ordinarily very quiet.

Case 6.—*History.*—A man, aged 33, married, and with one healthy child, had an entirely negative family history. He had never been sick, but had always been a very heavy drinker. Some years ago, the patient had worked in a manganese grinding plant but did not develop any symptoms at that time. After he was discharged from the army, he again worked for three months in a manganese grinding plant but had to stop on account of illness. He was so mentally abnormal at the time of discontinuing this occupation, and was drinking so heavily that he was committed to one of the state hospitals with the diagnosis of alcoholic psychosis. He was kept in this institution for two months and showed little improvement but was discharged.

He complained of stiffness and vague pains all over his body. The general physical examination was negative.

Neurologic Examination.—The patient showed a steady station; his posture was bent forward and his gait was slow and awkward; the deep and superficial reflexes were present and equal; there were no pyramidal tract signs, no cranial nerve involvement, no sensory changes and no incoordination. There was a marked anteroposterior head nodding, but no tremors of the extremities. There was a generalized muscular weakness without atrophy. The pupils were normal, the eye grounds showed a very reddened vascular retina with no changes in the disks. He had marked lack of expression with a more or less constant silly, causeless laughter. Mental examination showed the patient to be irritable and suspicious and at times, unruly and destructive. His speech was slow and monotonous, and he expressed himself very poorly. His memory was definitely impaired, and he was very asocial. Evidently there was present rather marked mental deterioration.

LABORATORY FINDINGS

It was not possible to obtain laboratory examinations in one of the six cases. A spinal fluid examination was made in each of the others. The cell count was above 10 in two: 12 and 14 cells per cubic millimeter. The globulin was normal, as were the pressures, colloidal gold curves and the Wassermann tests.

The blood Wassermann reaction was negative in all five cases. The spinal fluid and stools showed no trace of manganese in any case. The routine urine examinations were negative, but manganese was detected in the urine in three of the five specimens examined. In two of them, there was only a trace, but in one it was found in abundance, 5 mg. per liter. Manganese might have been found in each case had a larger quantity of urine been examined. In these examinations, 2 liters were used. The patient in whose urine manganese was found in the greatest quantity had discontinued work in the manganese dust two days before he was examined. The two patients in whose urine none of the element was found had been longest away from exposure. No examination of blood smears was made, but no changes in the size or shape of the red blood cells or material variation from normal of the white cells were found by a colleague who did make such a test in one of the cases here reported during the time the patient was most acutely ill.

It is generally agreed that manganese is eliminated chiefly in the feces and to a lesser extent in the urine. Wagner,[13] von Jaksch,[7] Seiffer[5] and all other investigators report no manganese in the urine of their clinical cases even though a careful search was made. In experimental studies on animals, Harnack[14] found only a minute amount of manganese in the urine and concluded that it was eliminated only in a small degree by the kidneys. Cahn[15] is also of the opinion, based on animal experimentation, that manganese is eliminated to some extent by the kidneys, but he found in no case the amount eliminated in this way proportionate to the amount introduced into the body.

COURSE AND PROGNOSIS

In persons who are susceptible to the invasion of the central nervous system by this poison, there appeared to be a gradual progression of the symptoms as long as they continued to absorb the manganese dust. The symptoms remained at the maximum for varying lengths of time and then tended to show gradual improvement up to a certain point. I am of the opinion, because of the well grounded belief that there is a destruction of cerebral tissue causing the symptoms of this condition, that there will be, except in the mildest cases, permanent disability of those poisoned by this metal.

PROPHYLAXIS

Prevention is a problem of the industrial hygienist rather than of the neurologist. Nevertheless, poisoning by the inhalation of manganese dust can certainly be prevented, provided very simple precautions are rigidly maintained. No face mask through which a man must breathe while at work is pleasant to wear, but, because of the dangers encountered, the wearing of an approved mask should be rigidly enforced. The exposed skin of men working in the mill which I inspected was literally caked with manganese; no gloves were worn, and the ore was thick under the nails. It is hardly conceivable that men working in this mill are very different from other mill workers, and, if this is true, we know that their personal hygiene is not all that could be desired. Therefore, the installation of showers, and insistence on the part of the mill operators that baths be taken and a change of working clothes be made at the end of each day's work is essential. A very important and necessary preventive measure would be an efficient fan-suction dust collector which would keep the air in circulation, collect a large part of the dust and thus lessen the chance of poisoning.

TREATMENT

The treatment suggested for the condition has been massage, corrective exercises, warm baths and various types of hydrotherapy, together with stimulation of the excretion of the poison by general elimination.

SUMMARY

1. Manganese, more often than is recognized, causes symptoms in workmen handling this ore.
2. That certain persons are not susceptible to the poisoning effects of manganese is demonstrated by the fact that many workmen in this plant have been in contact with manganese dust for several years with no apparent ill effect.
3. Mental symptoms have been described by some investigators and denied by others. Mental changes were found in each of the patients of this series.
4. No record could be found of other investigators having detected manganese in the urine in clinical cases. Experimentally, it had been found in minute amounts. In this series, it was present in three of the five specimens of urine examined.

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ARTHROPLASTY OF THE TEMPOROMAXILLARY JOINT *

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To state briefly the anatomy of the temporomaxillary joint and its associated parts, first, from the osseous standpoint, there is the condyle and its neck, the sigmoid notch and the coronoid process. Overlying these structures, we have the zygomatic process and its anterior root, which is broad and strong, to terminate in a rounded eminence, the eminentia articularis. This eminence forms the anterior boundary of the glenoid fossa, and in the recent state is covered with cartilage. The middle root forms the posterior boundary of the mandibular portion of the glenoid fossa. The glenoid fossa is bounded posteriorly by the vaginal and auditory processes. The junction of the anterior root with the zygoma is a projection called the tubercle, for attachment of the external lateral ligament of the lower jaw. Between the anterior and middle roots is an oval depression forming part of the glenoid fossa for the reception of the condyle of the lower jaw. This fossa is bounded in front by the eminentia articularis; behind, by the tympanic plate and the auditory process, and is divided into two parts by a narrow slit, the gasserian fissure. The anterior or mandibular part, formed by the squamous portion of the bone, is smooth, covered in the recent state by cartilage, and articulates with the condyle of the lower jaw. This part of the glenoid fossa is separated from the auditory process by the postglenoid process, which, in mammalia, prevents backward displacement.

The ligaments that enter this joint are the external lateral, the capsular, and the interarticular fibrocartilage.

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13. Wagner, Vrtljschr. f. gerichtl. Med. **27**: 354, 1904.
14. Harnack, Erich: Arch. f. exper. Path. u. Pharmakol. **46**: 372, 1901.
15. Cahn, Joseph: Arch. f. exper. Path. u. Pharmakol. **18**: 129, 1884.

* Read before the Section on Stomatology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

Overlying this bony anatomy, the important structures that must be guarded are: of first importance, the frontal and orbital branches of the facial nerve, the temporal artery and its branch, the transverse facial, the temporal vein and the auricular temporal nerve. Immediately internal to the condyle is the internal maxillary artery, which is injured occasionally when the head of the condyle is removed. The temporal artery and vein, with its branches, occasionally gives a most troublesome hemorrhage when torn or cut unintentionally; but, generally speaking, the larger branches can be avoided. . It is the frontal and orbital branches of the facial nerve that are frequently severed in this operation, and, because of the uncertainty of their position, I suggest the vertical incision. I am sure that most operators have encountered the occasional case in which the frontal if not the orbital branches have been divided. This is not to be mistaken for the paresis shown in the inability to close the upper eyelid on that side following operation, which is due to the retraction during the operation. Here I would suggest that the mastoid self-containing retractor be used.

HISTORY

Briefly, the history is as follows: Humphrey reports resection of the head, in 1854; Grube, in 1863; Whitehead, in 1874, and König, in 1878. The operation has been modified by different surgeons. Helferich interposed muscle from the temporal; Mikulicz interposed masseter muscle, and Murphy used fascia from the temporal muscle. Roser interposed a gold plate; Payr suggested magnesium; Hofmann used free periosteum; Rochet and Poisson resected the ascending ramus. Many other operations have been suggested.

ETIOLOGY

The sexes are about equally affected. Orlow found sixty-eight patients (about 80 per cent.) between 1 and 10 years; 15 per cent. between 11 and 20; 5 per cent. between 21 and 30. Blair gives from 2 to 57 years, 25 per cent. of whom were under 10. In Orlow's cases, trauma was the cause in 29.4; otitis media, either primary or as a complication of some general infectious disease, 22 per cent.; osteomyelitis, periostitis of neighboring bones, 12.6 per cent.; rheumatic, gonorrheal and other inflammation of the mandibular joint, 10.5 per cent. Blair reports that 50 per cent. of his cases were due to trauma. In my series of seventeen cases, one was due to diphtheria, two were congenital and fourteen were due to trauma.

In considering this subject, I am following the classification of articular, extra-articular and articular-extra-articular. Three of my series were extra-articular and the others articular. I believe that a modified incision is much safer, and that in some cases of extra-articular trismus the epithelial inlay suggested by Esser in 1916, and modified by Waldron in 1917, at Sidcup, England, is most useful. I have searched the literature, and believe the method I am reporting is new, if not original.

OPERATION

The usual incision is L-shaped, the vertical limb extending from the level of the floor of the external auditory meatus and parallel with the ear but anterior to the temporal artery, and the horizontal or short limb extending forward slightly above the zygoma for about 2 cm., but only through the skin. I suggest that, because of the difficulty of locating with precision the orbital branch of the facial, which is frequently divided in this operation, only the vertical incision be made, about 1 inch long, starting from the level of the floor of the external auditory meatus. I fully recognize that this gives a poor exposure, but with patience, the condyle and even the coronoid may be removed through this incision. On removal of the condyle, I have filled the glenoid area with free fascia lata from the hip, and have also used Cargile membrane; but I prefer the former.

The value of any interposed tissue is open to doubt, as considerable experimental work has been done, more particularly with fat, which has disappeared in a very short time—in my own cases, within less than two months' time. I do believe that the holding apart of the remains of the ascending ramus and the cup-shaped cavity (the glenoid fossa) is important.

The shaping of the ascending ramus from which the head of the condyle has been removed is of great importance. It should be pointed anteroposteriorly and narrow laterally. By that, I mean that the new head should be diamond-shaped, and as narrow or thin as possible, in this way allowing for a very small attachment of fibrous tissue.

The case I wish to report in particular is one in which the trismus was due to a fibrotic change in the internal pterygoid muscle, due to shrapnel. The muscle was largely replaced by fibrous tissue, and the mouth could be forced open under a general anesthetic but would return to the fixed position in a short time. It was decided that an epithelization of that area would overcome the contraction due to the fibrous tissue. An epithelial inlay was implanted near the attachment of the internal pterygoid muscle through an incision parallel with the acclusal surface of the lower teeth. Dental compound was molded to fit in this incision, which had been carried well through the fibrous tissue and held in position by silkworm-gut sutures. It was necessary to implant three inlays before the mouth could be opened to its fullest extent.

The most satisfactory results we have obtained were in cases of extra-articular trismus due to the union of the coronoid process to the inner surface of the zygoma or to the base of the pterygoid process of the sphenoid. This was, of course, of traumatic origin. In these cases, the coronoid process was resected but the joint was left intact, and the result was excellent.

There is another feature of these cases that should not be neglected; that is, the recession of the chin. It has been suggested that a double resection of the ascending ramus be made and that the lower jaw be pulled well forward and held in this position by attachment to the upper jaw. This, I feel, is an excellent method if it can be used, but I have found it difficult to adapt this treatment for a number of my cases. I would suggest the following:

A seventh or eighth rib of the proper curvature and length should be taken from the patient and inserted over the mental process of the lower jaw. It is necessary in these cases to roughen the outer surface of the mandible and the inner surface of the graft, and wire it into position with any light wire, say the medium orthodontia wire. Needless to say, the technic of this operation is very exacting, as it is a free transplant, and in the dissection, one must not go too far up on the outer surface of the lower jaw, for fear of entering the mouth through the neck incision.

CONCLUSION

These cases, while they appear simple because the joint is superficial, present many difficulties, and the final results are not so uniform as one may desire; but in my short experience, by following the procedure outlined in this short paper, we were able to obtain even in the worst cases a moderately good result; consequently, I believe in the operation as near the joint as possible.

ABSTRACT OF DISCUSSION

Dr. T. E. Carmody, Denver: For a number of years I have used the incision Dr. Risdon recommends, and I can obtain plenty of opening through this incision for the removal of the condyle. As Dr. Risdon says, it is difficult at times because the opening is small, but by use of the mastoid retractor for forcing back the tissues, one can, as a rule, get sufficient opening for removal. The fact that paralysis does not develop or that one is not quite so liable to injure the temporal artery or the internal maxillary artery makes it worth while to take a little extra trouble. It prolongs the operation only a few minutes, but not enough to interfere with the tissue. For some years, I have not placed the tissue in between the parts of the mandible, and I find that my results are just as good, especially as there is such a small amount of tissue.

Dr. Robert Ivy, Philadelphia: I believe that Dr. Blair of St. Louis, in 1911, was the first one to advocate the interposition of temporal fascia, even before Dr. Murphy. The incision that Dr. Blair employs is most suitable when it is desired to use temporal fascia. The incision ascends vertically in front of the ear, then curves forward well above the zygoma. We do frequently get some paralysis of the occipital frontalis muscle, but I never have seen paralysis of the orbicularis palpebrarum.

Dr. Herbert A. Potts, Chicago: I should like to point out the dangers of wholesale extraction of teeth. The extraction of a tooth requires as much care, attention and thought as the opening of the abdomen, because of the complications that may follow. A young woman had three third molars extracted. Whether or not they were infected at the time or whether they became infected afterward I do not know, but, at any rate, she developed a pyremia, abscesses in each groin, a pleural abscess and an abscess in each parotid, from which she almost died. The parotid abscesses resulted in a complete bony ankylosis of both temporomandibular joints. The jaw was just plastered to the base of the skull from the joint clear out to the tip of the coronoid process. An incision was made similar to the one which Dr. Ivy showed, and the mandible was liberated from the base of the bone, but on one side, just after liberating the coronoid process, I opened a vein and a severe hemorrhage resulted. The wound was perfectly clean for a week, with only a provisional drain placed in it; a week later in operating on the other side, I made the mistake of opening the first wound and placing some fascia lata in at that time. On the left side one can hardly see the line of incision through which this operation was done. I think that, had I refrained from opening the first wound, I should not have had the slight infection and the scar on the other side. But the principal danger is in extracting a tooth, dismissing the patient, and not giving any further attention to him.

Dr. E. Fulton Risdon, Toronto: The interposition of material certainly is not necessary. I never take off the zygoma; it leaves things projecting in a rather unsightly way. If one takes off a section of the zygoma, of course, one must bring it over; it cannot be brought under. These operations should not be undertaken lightly; especially should the incision be kept high, never coming below the level of the floor of the external auditory meatus. A number of patients have come to me recently with a total paralysis of the muscles on that side: it is a question whether these anastomoses are very successful.

Gastro-Enterostomy.—Of all the operations for benign lesions of the stomach or duodenum, gastro-enterostomy has the widest range of usefulness. When indications are adequate, gastro-enterostomy leaves little to be desired.—Balfour.

THE TREATMENT AND PROGNOSIS IN MYXEDEMA [*]

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When Dr. George Murray [1] read his classic paper before the British Medical Association in July, 1891, on the treatment of myxedema by the administration of the thyroid gland of sheep, the medical world in general proclaimed, and quite correctly, that there had been discovered another specific remedy for what had usually been regarded as a hopeless condition. Marvelous as the cure may be in most instances, it is obvious to any one who has observed a group of these patients under treatment over a long period, that even though the diagnosis is correct and the preparation used in treatment is potent, there is often a failure, either partial or complete, to effect a cure. This may be due to several reasons which will be considered later, but undoubtedly the chief cause is the careless administration of a drug which must be given with the greatest exactness in order to produce satisfactory results. It is often apparent that mistakes in the management of these patients have been made because the treatment of myxedema has been considered too simple.

It is our purpose in this study to appraise carefully the method of treatment that has been used on a series of patients in this hospital in an endeavor to formulate a method whereby treatment can be administered with the greatest efficiency and safety. In addition, an opportunity has been afforded to observe a number of patients over a considerable period, and certain conclusions concerning the prognosis in this disease have been formulated.

This study is based on a series of twenty-six patients, all of whom presented the typical symptoms and signs of myxedema and, in addition, all had a characteristically diminished basal metabolism. A fairly large group of patients was excluded from the series as the diagnosis in some instances was in doubt or the condition atypical in various aspects. It is fortunate that the same preparation of dried thyroid gland (Armour's) has been used since the hospital was opened, and there has never been any conclusive clinical evidence that the potency of the drug has varied. There may be a great variation in the strength of the drug as prepared by different manufacturers according to the careful studies of Dr. Reid Hunt,[2] who has been interested in this important question for a good many years. In his opinion, this variation in potency results from the fact that there is no generally accepted standard for thyroid. At present, the most sensible procedure for the clinician is to use one preparation constantly and determine by careful clinical observations its strength and dosage. Treatment was controlled in all the patients of this series by (1) the clinical response of the patient, (2) the basal metabolism, (3) the resting pulse rate, and (4) the body weight. Data concerning this group of patients are shown in the accompanying table. No attempt will be made in the present paper to discuss the clinical aspects of myxedema or the relation of the low metabolism to the disease, as these features have been reported from the medical service of this hospital in a previous communication.[3]

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[*] From the Medical Clinic of the Peter Bent Brigham Hospital.

[1] Murray, George: On the Treatment of Myxedema by the Hypodermic Injection of an Extract of the Thyroid Gland of the Sheep, Brit. M. J. 2:796 (Oct. 10) 1891.

[2] Hunt, Reid: Standardization of Thyroid Preparations, Arch. Int. Med. 35:671 (June) 1925.

METHOD OF ADMINISTERING THYROID GLAND

It has long been emphasized that the most satisfactory method of treating myxedema is to divide the therapy into two stages, (1) the initial dosage, which is calculated to restore the patient to a normal level of metabolism, and (2) the maintenance dosage, which is the smallest amount necessary to keep the metabolism within normal limits. For convenience, our experience in the management of each stage of the therapy will be considered separately.

In untreated patients with the characteristic picture of myxedema, we have found that the amount of dried thyroid gland which is necessary to restore the basal metabolism from the initial low point to normal has varied widely, as the total amounts necessary in this series have ranged from 2 3 to 6.5 gm. This variation has been due, in part at least, to the lack of a constant time interval over which the drug has been given. For example, in some patients the metabolism has been raised to normal by relatively large doses which were given for a few days, while in others the same result has been obtained by the administration of much smaller doses for a longer period. Future studies with a uniform dosage may yield more constant results. Several years ago, it was thought that it might be possible to estimate precisely the amount of dried thyroid necessary, from the patient's body weight and the degree of the change in the metabolism in a similar manner to the modern method of calculating digitalis dosage, in patients with heart disease, from the body weight. Our present experience has suggested, however, that sex, age, body weight, duration of the disease, severity of the symptoms, and the initial level of the metabolism bear no accurate or constant relationship to the amount of thyroid gland necessary to restore the patient to a normal condition.

Data in Thyroid Treatment of Twenty-Six Patients With Myxedema

	Age	Sex*	Initial Metabolism Before Treatment, per Cent of Normal	Duration of Symptoms	Maintenance Dose, Daily
1 G L F	22	♀	—34	2 yr	0 13 gm
2 I R F	22	♂	29	2 mo	0 13 gm
3 J F K	50	♂	—25	1 yr	0 13 gm
4 M H	50	♀	—28	6 yr	0 13 gm
5 M T M	73	♀	—33	28 yr	0 13 gm
6 D McK	43	♂	—40	6 yr.	0 195 gm
7 J F B	48	♂	—32	5 yr	0 086 gm
8 S H V	42	♂	—38	18 mo	0 13 gm
9 T B F	42	♀	—34	7 yr	0 13 gm
10 A N	56	♂	—26	1 yr	0 13 gm
11 S I P	61	♀	—26	2 yr	0 13 gm
12 I M S	67	♀	—26	5 yr.	0 195 gm
13 M J B	62	♀	—49	2 yr.	0 065 gm
14 K O	50	♀	—41	6 yr	0 13 gm
15 F M W	50	♀	—36	17 yr	0 195 gm
16 F N T	60	♂	—39	7 yr	0 097 gm
17 A L A	52	♀	—28	5 yr	0 13 gm
18 C M	38	♀	—31	3 yr.	0 195 gm
19 J H T	33	♂	—26	3 5 yr.	0 13 gm
20 M J S	53	♀	—33	1 yr.	0 195 gm
21. A I	49	♂	—18	4 yr	0 39 gm
22 L B C	39	♀	—21		0 195 gm
23 H T B	59	♀	—36	4 yr	0.195 gm
24 B N M	52	♀	—31	8 yr	0 13 gm
25 J C F.	40	♂	—26	1 yr	0 030 gm
26. P W	41	♀	—18	3 yr	0 065 gm

* In this column, ♂ indicates male; ♀, female

While it may be possible to calculate the exact effect of a definite dose of thyroxin on a myxedematous patient when it is given intravenously, we have not been able to determine the effect of a known amount of dried gland with a similar degree of accuracy when given by mouth. This might be expected, however, as thyroxin is a highly refined preparation of known chemical composition, while "dried thyroid gland" is of a less definite nature and, moreover, can be given only by mouth. This, therefore, introduces the complicating factor that the drug may not undergo complete absorption in the gastro-intestinal tract. The failure to formulate a precise method of estimating the amount of dried thyroid gland to use in the initial stage has led to the adoption of a known safe dosage which is given over a variable length of time depending on its effect on the patient. In the average adult patient without complications, it has been found that a dosage of 0 13 gm (2 grains) three times a day can be continued with safety until the basal metabolism and pulse reach normal[4] With this dosage, the metabolic level and pulse rate usually reach normal in from five to ten days, although individual patients show a wide variation in this respect, and it is advisable, therefore, to keep the patient under close observation and continue with this amount until satisfactory results are obtained. In treating patients with uncomplicated myxedema, it is more satisfactory to confine them in a hospital for from two to three weeks, as this permits close observation and their activity can be controlled. As profound changes occur in the patient's metabolism during the early stages of treatment, it is desirable to keep them in bed for at least a week as a precaution against unpleasant symptoms.

If the patient is under observation in a hospital, the initial dosage of 0 13 gm. (2 grains) three times a day is continued until the metabolism and resting pulse rate approach normal and there is clinical evidence of improvement It has been our custom to determine the basal metabolism, resting pulse rate, and body weight at least every other day in order to control the dosage more accurately. After thyroid gland has been given in amounts of 0.13 gm. three times a day for three or four days, the first clinical evidence of a thyroid effect is shown by the patient experiencing a sensation of increased warmth, moderate sweating and accelerated mental reactions. Coincident with these changes, there is usually a slight increase in the resting pulse rate, averaging about 10 beats a minute, and, likewise, the basal metabolism shows an average rise of 10 per cent. At this time, the patient's temperature may become somewhat elevated above normal for a few days, the average, however, not exceeding 100 F. As untreated patients with myxedema frequently have a subnormal temperature, this change following treatment is one of considerable magnitude, and it is not uncommon for a patient under these circumstances to complain of malaise, mild generalized aches and pains, and loss of appetite. The drug should be continued, however, until the basal metabolism is between — 10 and — 5, according to the standards of Du Bois. While it is generally accepted that the normal varies between — 10 and + 10 according to these standards, it has been our experience that the average patient with myxedema more nearly approaches a condition approximating normal if the metabolism is maintained between — 5 and — 10. If the metabolism remains at this level for five or six weeks, there will be a loss of weight which averages from 10 to 15 pounds (4.5 to 6.8 kg.). This loss is due apparently to the disappearance of the subcutaneous, nonpitting edema that is characteristic of the disease. After several months of treatment, it is commonly observed that the patients regain this weight and 5 or 10 pounds (2.3 or 4.5 kg.) in addition, which doubtless results from their greatly improved general nutrition.

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[3] Sturgis, C. C. A Clinical Study of Myxedema, with Observations on the Basal Metabolism, M. Clin N Am 5: 1251 (March) 1922.

[4] The same amount may be given four times a day if the patient is under observation in a hospital and no complications exist

After the patient's basal metabolism and pulse rate have been restored to normal and there has been evidence of clinical improvement, the second stage of treatment is begun. The object at this time is to determine the exact dosage which will maintain the metabolism at the proper level. This has been called the maintenance dose, and is the amount that is to be taken by the patient each day. This dosage when once established is usually constant and in most instances must be continued throughout a patient's life, although occasionally the size of the dose must be altered, and in very rare instances it appears that there may be complete recovery from myxedema, as the drug may be discontinued without a recurrence of the disease. Our experience has taught us that most frequently the correct dose is in the vicinity of 0.13 gm. (2 grains) a day, although in individual patients the amount has varied from 0.065 gm. (1 grain) to 0.195 gm. (3 grains) daily. In a study of twenty-five patients with myxedema who have been observed over a sufficient length of time to make our results significant, we found that fourteen required a maintenance dose of 0.13 gm. (2 grains) daily; six, a dose of 0.195 gm. (3 grains); two, a dose of 0.065 gm. (1 grain), and three, a dose of 0.098 gm. (1.5 grains). Occasionally a patient has taken as much as 0.39 gm. (6 grains) as a maintenance dose for a short period, but this amount has invariably produced symptoms of overdosage if continued for any length of time.

It is possible to carry out the entire treatment in the patient's home, although the results are less satisfactory, as the dosage cannot be regulated with great accuracy. Moreover, a longer time is required to restore the patient to normal, as the initial dosage must be smaller in order to avoid the possibility of undesirable symptoms. After the diagnosis has been established, if it is desired to treat the patient at home, the following plan has been found to be satisfactory: Dried thyroid gland is given in a dosage of 0.13 gm. (2 grains) three times a day for five days. During this interval, the patient should be confined to the house and should spend a major part of the time resting in bed. Each day the pulse rate should be counted by the patient or by some member of the family, before the patient arises in the morning. In this way the basal pulse rate is obtained, and such factors as food and muscular activity, which influence the pulse rate, are eliminated. In the absence of basal metabolism estimations, a careful determination of the resting pulse rate is of great value as it gives an accurate idea of the basal metabolism in most instances. This relationship has been emphasized in a previous communication[5] from this hospital and has been confirmed by others.[6] Under certain conditions, however, such as complete heart block, the pulse rate may remain unchanged despite an increase in the basal metabolism.

Such an occurrence is illustrated by the case record of a patient reported by Aub and Stern.[7] A young woman with a complete heart block and a pulse rate which varied from 49 to 63 a minute was given large doses of thyroid substance. Although the basal metabolism increased to + 40, there was no coincident changes in the pulse rate. Such a possibility, although rare, should always be considered if the pulse rate is used as a guide to the administration of thyroid gland. The body weight should also be obtained before the treatment and again at the end of five days. If the resting pulse rate has not increased above 80 a minute and there has been a loss of only 2 or 3 pounds (0.9 or 1.4 kg.) in body weight, there is no indication of overdosage, provided the patient does not complain of palpitation, dyspnea, excessive warmth, dizziness or nausea. If all is satisfactory, the treatment may be continued by giving the thyroid tablets in amounts of 0.13 gm. twice a day. This dosage should be maintained until the resting pulse rate is in the vicinity of 75 a minute, unless symptoms of overdosage appear. When the pulse rate reaches a satisfactory level, the amount of thyroid gland that is given should be reduced to 0.13 gm. daily, and this should be considered as the maintenance dose. A determination of the basal metabolism at weekly intervals is very helpful in regulating the treatment.

The chief difficulties that are encountered in the management of patients with myxedema may for the most part be attributed to careless observation on the part of the physician or failure of the patient to follow instructions. If a patient with myxedema is given a prescription for thyroid tablets and instructed to take a certain number each day and report back in a few weeks, the possibility of an underdosage or overdosage is likely. The latter more commonly occurs with the result that unpleasant and possibly serious symptoms develop. This is unfortunate as the patient is frequently reluctant to continue with further treatment, since in most instances following an overdosage there develops an abnormal fear of the drug, and a tendency to attribute every possible symptom that develops thereafter to an excess of the thyroid substance.

An additional difficulty in the treatment of myxedema is the lack of cooperation of the patient. This is shown by the observation that approximately one fourth of our patients have at some time during the course of their treatment discontinued taking thyroid tablets of their own volition, despite our instructions. As a result they have had, with a very rare exception, either a partial or a complete relapse of the disease. This lack of cooperation results from a failure of the patients to appreciate the importance of continuing with the drug after all symptoms of the disease have disappeared. After the drug has been omitted for a period of several weeks, the condition of partial or complete myxedema again becomes apparent, with a rare exception. Following this, the characteristic mental dulness and lack of interest become manifest, and the patient no longer has the initiative to consult a physician. On account of the tendency of so many to discontinue treatment, we have for the last three years required all patients with myxedema to report to the outdoor department at regular intervals for observation, in order to eliminate this important cause of therapeutic failure. At each visit a careful examination is made, and if there is any indication that the optimal treatment is not being carried out, the basal metabolism is determined and the dosage is adjusted accordingly. If it becomes necessary to adjust the maintenance dosage, the patients are required to record their resting pulse and body weight daily over a period of several weeks. These data, when considered with a careful inquiry into the symptoms and combined with the basal metabolism determinations, eliminate careless observation and afford an accurate guide for the proper regulation of treatment.

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[6] Read, J. M.: Correlation of Basal Metabolic Rate with Pulse Rate and Pulse Pressure, J. A. M. A. **78:** 1887 (June 17) 1922. Minot, G. R. and Means, J. H.: The Metabolism-Pulse Ratio in Exophthalmic Goiter and Leukemia, Arch. Int. Med. **33:** 576 (May) 1924.

[7] Aub, J. C., *and* Stern, N. S.: The Influence of Large Doses of Thyroid Extract on the Total Metabolism and Heart in a Case of Heart-Block, Arch Int Med **21:** 130 (Jan.) *1918*

SERIOUS COMPLICATIONS THAT MAY BE ENCOUNTERED IN TREATING PATIENTS WITH MYXEDEMA WITH THYROID GLAND

There are several complications that may exist in patients with myxedema which make the administration of thyroid gland a somewhat hazardous procedure unless the treatment is very carefully controlled. The complications involve chiefly the heart, kidneys and blood and are observed more frequently in the middle aged or elderly patients

Recently, Fahr[8] has emphasized that in myxedema there may be definite symptoms and signs of heart failure which do not respond to the therapy of rest and digitalis but are cured by thyroid medication. Fishberg[9] has likewise pointed out that a greatly dilated heart occurs commonly in myxedema and, furthermore, a generalized arteriosclerosis may be observed even in young patients. The latter reported the case of a man, aged 21, with myxedema, in whom necropsy showed an enlarged heart and, in addition, a generalized arteriosclerosis, which included atheromatous patches of the arches of the aorta, was present. Swan[10] has reported his observations on a patient with myxedema in whom auricular fibrillation appeared following the use of thyroid substance. The rate became regular when the drug was discontinued; auricular fibrillation reappeared on renewal of the treatment and disappeared a second time when the drug was withdrawn. The point we wish to emphasize is that patients with myxedema may have a serious impairment of the myocardium, and this may be improved or cured by the administration of thyroid gland; but under these circumstances, the drug should be given with great caution as otherwise unfavorable and fatal results may follow. This is well illustrated by the following case report of a patient who was recently observed in the Peter Bent Brigham Hospital:

M. H. B., a Scotch woman, married, aged 50, entered the hospital, Feb. 17, 1925. She gave the classic history of myxedema extending over a period of several years, and this was confirmed by the physical examination and a basal metabolism of —32. In addition, the patient gave a history of angina pectoris and, furthermore, showed a severe anemia as indicated by a red blood count of 2,000,000 cells per cubic millimeter. Treatment was given in the form of dried thyroid gland in doses of 0.13 gm. (2 grams) three times a day. After six doses were taken, the temperature suddenly rose to 101 F. but returned to normal in a few hours. There was no apparent explanation of the febrile reaction, and as there was no other evidence at the time that the dosage was excessive, it was decided to continue with the thyroid therapy. Accordingly, eight more doses of 0.13 gm. were given in the next twenty-four hours. The basal metabolic rate at this time was found to be —11. The patient's condition, however, suddenly became alarming, as indicated by a weak, feeble pulse of 120 a minute, cyanosis, cold and clammy skin, and a temperature of 101 by mouth. Although the thyroid medication was immediately discontinued, it was a week before the patient recovered from this state of profound collapse. Following this, the thyroid substance was omitted for sixteen days, and during this interval digitalis was administered in full doses. At the end of this time, dried thyroid gland was again given in doses of 0.03 gm. twice a day. Two days later, the patient was found in collapse and pulseless and died in a few minutes without regaining consciousness. Necropsy showed coronary arteriosclerosis, cardiac infarction, hypertrophy and dilatation of the heart, atrophy and fibrosis of the thyroid gland and generalized arteriosclerosis.

This fatality illustrates very strikingly the disaster that may follow the administration of thyroid gland in a patient who has serious heart disease. Apparently the myocardium of this patient was unable to meet the strain imposed on it by the increased cellular metabolism that followed the use of thyroid gland, even in moderate doses. Under the circumstances, there was an increased demand for oxygen by the body tissues, and this could be delivered to the cells only by the blood stream. As a result, it was necessary to augment the circulation rate, and an added strain was thereby put on the heart muscle, which was unable to respond. An added handicap was the frequently observed anemia of the disease[11] as indicated by a red blood count of 2,000,000 cells per cubic millimeter, which resulted in a diminished ability of the blood to carry oxygen. Consequently, the heart was obliged to perform much more work, as each unit of blood carried less oxygen than normal and, therefore, a greatly increased circulation rate was necessary. This experience taught us that a more logical and safer procedure to carry out in such a patient is to give two or three blood transfusions of from 250 to 300 c.c. each and thereby increase the oxygen carrying capacity of the blood. Moreover, such a patient should be thoroughly digitalized. It is also of great importance that the initial doses of thyroid gland should be exceedingly small, such as 0.03 gm. (one-half grain) twice a day. If no untoward symptoms develop, the dose may be cautiously increased.

In addition to changes in the heart and blood, it has long been known that a majority of patients with myxedema have albumin and casts in the urine, and some have a definite renal insufficiency, as shown by the functional tests. The danger that may result under these circumstances is well shown by the studies of Bowen and Boothby[12] which were reported from this hospital in 1917. They found that moderate amounts of thyroid gland by mouth, in patients with chronic nephritis, caused an increase in the blood urea nitrogen and serious effects may result. In one case that they reported, the blood urea nitrogen rose, during the course of a few weeks, from 148 mg. per hundred cubic centimeters of blood to 216 mg. following thyroid feeding. From these studies, it is obvious that all patients with myxedema who are unable to excrete nitrogen in normal amounts, as indicated by an accumulation of nitrogenous products in the blood stream, should be given thyroid gland medication with extreme caution.

It seems advisable, therefore, before giving thyroid gland by mouth to a patient with myxedema, to consider carefully the patient's history, physical examination and laboratory studies, and to ascertain whether there are any abnormalities of the heart, blood or kidneys. If complications are present, the patient should be kept strictly in bed and thyroid given in very small amounts. If the heart is markedly involved, digitalis and rest should be given before treatment with thyroid gland. If the patient has an anemia, a transfusion should be considered before the thyroid treatment is begun. If a chronic nephritis exists and there is impaired renal function, the thyroid dosage should be small, the diet reduced in protein, and constant watch should be kept of the blood urea nitrogen.

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[9] Fishberg, A. M.: Arteriosclerosis in Thyroid Deficiency, J. A. M. A. **82**: 463 (Feb. 9) 1924.

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[11] Emery, E. S., Jr.: Blood in Myxedema, Am. J. M. Sc. **155**: 577 (April) 1925.

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THE PROGNOSIS IN MYXEDEMA

It is commonly accepted that a patient who is suffering from myxedema can be restored to normal health by the proper administration of dried thyroid gland. It is likewise thought that it is necessary for a patient with myxedema to continue taking thyroid gland substance indefinitely, in order to remain in normal health. While these statements are essentially true, both have had what appeared to be exceptions, in our experience.

The prognosis for cure should also be guarded if the patient shows advanced lesions involving the central nervous system, heart or kidneys. While the general condition may be markedly benefited and the complicating factor may likewise show improvement, it is too much to expect that definite anatomic changes in the heart, nervous system or kidneys can always be completely eradicated. The following record indicates the wisdom of a guarded prognosis in a patient with myxedema and an advanced renal lesion.

A woman, aged 62, had had the characteristic symptoms of myxedema for ten years. Physical examination showed the striking signs of the condition, and, in addition, there was evidence of renal injury as indicated by albumin and casts, and a phenolsulphonephthalein excretion of 8 per cent. in two hours and ten minutes. Following the careful administration of thyroid gland, there was a complete disappearance of all symptoms that could be attributed to the lack of thyroid secretion. In addition, the renal lesion showed some improvement, but the patient died in a few months of uremia.

Serious mental changes are likewise difficult to effect although the general symptoms and signs of myxedema in such a patient may be relieved. The following case record illustrates the inability of thyroid medication to relieve mental symptoms in this condition:

An Irish domestic, unmarried, aged 50, entered the hospital, Dec. 30, 1923, complaining of a gradually increasing loss of strength and energy of six years' duration. The patient had observed dryness of the skin, loss of hair, absence of sweating, and susceptibility to cold for several years. Her memory had failed a great deal, and there had been a very evident mental retardation. The basal metabolism was —28, and the resting pulse rate 54 a minute. Following careful treatment with thyroid gland, the basal metabolism and pulse rate returned to normal, and the general symptoms of myxedema disappeared. After the patient had remained on a maintenance dose of 0.13 gm. a day for several months, she discontinued the thyroid tablets on her own responsibility. Six weeks later, the metabolism was found to be within the limits of normal despite the lack of thyroid medication. Moreover, there was no evidence of a recurrence of the indications of myxedema, such as dry skin, loss of hair, or susceptibility to cold. The mental condition was progressive, and in a short time the deterioration became so marked that it became necessary to admit her to a hospital for treatment of mental disorders. The last basal metabolism, which was normal, was determined after she had not taken thyroid gland for four or five months.

This case illustrates two points of importance in the treatment of myxedema: (1) Serious mental changes which may be associated with the disease are not always relieved by thyroid therapy, and (2) in some instances the metabolism may remain within normal limits for at least four or five months after the thyroid medication is discontinued.

Further evidence that a patient may recover from spontaneous myxedema is furnished by the history of the following patient:

A grocery clerk, married, aged 33, who entered the hospital, Dec. 29, 1916, was found to have a dry, scaly skin, slow speech, retarded mental reactions, and loss of hair. The patient's temperature was subnormal, the resting pulse rate was 71 a minute, and the basal metabolism was —26. Thyroid therapy was instituted and was followed by a striking improvement in the patient's condition. The skin became warm and moist, a regrowth of hair occurred, and the appetite increased. He became more active physically and mentally. Six months later the thyroid tablets were discontinued because the patient felt so well. He was not seen again until October, 1924, eight years later, at which time he appeared at the hospital merely to report how well he had been. During this interval, all medication had been stopped, and the patient had remained in perfect health. The basal metabolism in October, 1924, was found to be +11.

Such evidence that a patient may make a recovery must be accepted with caution and should only be regarded as suggestive, as it is difficult to prove conclusively that the patient was suffering from myxedema when first observed in 1916, although the evidence in favor of this diagnosis is very strong. While these two exceptions have been observed, it can be stated definitely, however, that in almost every instance there is very little tendency toward spontaneous recovery, and that continued therapy throughout a patient's life is necessary for the maintenance of normal health.

DANGERS IN THE USE OF CERTAIN HALOGENATED PHTHALEINS AS FUNCTIONAL TESTS *

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In the last few years, certain halogenated phthalein compounds have come into widespread use as test materials for hepatic function and as mediums for cholecystography. For some time I have been using several of these compounds and have noticed, as a result of the intravenous injection of them into patients, reactions that are, potentially at least, dangerous to the individuals so treated. It is somewhat surprising that, in spite of the rather voluminous literature dealing with these substances, so far little attention has been paid to the untoward reactions following their use. The most important of these compounds has been phenoltetrachlorphthalein, but recently tetrabromphenolphthalein and tetra-iodophenolphthalein have become quite prominent in cholecystography.

Rowntree, Hurwitz and Bloomfield[1] were the first to make clinical use of phenoltetrachlorphthlein as a liver function test. Because of the many difficulties inherent in the measurement of the amount of dye recovered in the feces, it was not long before McNeil[2] utilized the collection of the duodenal contents to deter-

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* From the Medical Service and the Otto Baer Fund for Clinical Research of the Michael Reese Hospital, Chicago.

[1] Rowntree, L. G.; Hurwitz, S. H., and Bloomfield, A. L.: An Experimental and Clinical Study of the Value of Phenoltetrachlorphthalein as a Test for Hepatic Function, Bull. Johns Hopkins Hosp. **24**: 327 (Nov.) 1913.

[2] McNeil, H. L.: The Quantitative Estimation of Phenoltetrachlorphthalein Excreted in the Fresh Bile in Disease of the Liver, J. Lab. & Clin. Med. **1**: 822 (Aug.) 1916.

mine the appearance time of the dye in this fluid. Not until 1922, when Rosenthal[3] offered his modification, did the test receive any widespread use. His procedure was to inject the dye intravenously, in a dosage of 5 mg. per kilogram of body weight, and then to examine the rate of disappearance of the dye from the blood stream. Because of the difficulty often encountered in securing sharp or accurate readings, when there was present lipemia, bilirubinemia or hemolysis in the serum, Bloom and Rosenau[4] increased the accuracy of the test through acetone precipitation of the serum to be tested. Maurer and Gatewood,[5] utilizing the principle of acetone precipitation, have recently published an account of a method by which blood can be drawn from the ear by means of a blood-counting pipet, for the determination of the dye content of the serum.

Since Rosenthal presented his method, a large literature on the subject has made its appearance. Other than the developments of technic noted above, the great mass of the reports have been restricted to an evaluation of the method in the light of clinical results. The untoward reactions obtained following the use of phenoltetrachlorphthalein have been insufficiently emphasized.

UNTOWARD REACTIONS

1. *Thromboses.*—Rowntree, Hurwitz and Bloomfield, in their early work, stated that the alkali salts of phenoltetrachlorphthalein, administered subcutaneously, act as decided irritants unless they are highly diluted, as "such salts formed, as they are, by neutralizing a very weak acid with a very strong base are strongly hydrolized in aqueous solution and hence act on the tissues like solutions of caustic soda." In their clinical investigations they gave 8 c.c. of the dye, 400 mg., intravenously by the gravity method and washed through by from 50 to 100 c.c. of distilled water. Of the sixty-seven cases reported, in which this method was used, ten thromboses were encountered (over 13 per cent.). They stated that thromboses occur only when there is "marked anemia, myocardial insufficiency or advanced phlebosclerosis." Sisson,[6] using 8 c.c. of the disodium salt diluted in 100 c.c. of physiologic sodium chlorid solution, reported five thromboses in thirty-nine patients (13 per cent.). He stated that the thromboses had no relation to the disease of the patient. Chesney, Marshall and Rowntree[7] reported eight thromboses in a series of 113 cases (7 per cent.). They emphasized that thromboses frequently follow at the point of injection, as evidenced by a slight local pain or tenderness or a sense of resistance offered the palpating finger. McNeil,[2] Kahn,[8] Aaron, Beck and Schneider,[9] Williams[10] and others failed to mention the presence or absence of thromboses in their studies.

Rosenthal in his early communications gave no statistics regarding the frequency of thromboses, but advised an adequate dilution of the drug in physiologic sodium chlorid solution, as he stated that the undiluted dye might cause local irritation and occasionally thrombosis. Friedenwald and Gantt,[11] in a report covering 169 injections, commented on "several instances of thrombosis from the action of the concentrated dye on the walls of the vein at the site of injection." They reported that they had not noted a single untoward reaction, since they had been using sterile physiologic sodium chlorid solution as a diluent. In a few other communications, passing mention of the occurrence of thromboses is made.

More recently, Bloom and Rosenau[4] reported four thromboses in twenty-seven cases (14.8 per cent.). In this series, I took every precaution to prevent the occurrence of either a local reaction or a thrombosis. The dye was diluted 1 part to 2, 3 or 4 parts of sterile physiologic sodium chlorid solution and, following the injection, from 10 to 20 c.c. of physiologic sodium chlorid solution was injected, in an attempt to wash away any of the dye that might be adherent to the vein wall at the site of injection. Care was also taken to prevent any leakage of the dye into the subcutaneous tissues. These added precautions, in addition to gentle handling of the tissues, did not prevent the occurrence of local tissue reactions or thromboses. In one of the cases of thrombosis in our series, a thrombus formed in the vein from which the blood was withdrawn, as well as in the vein into which the injection of the dye had been made. The thromboses appeared from twenty-four to forty-eight hours following the injection and had the usual characteristics. Maurer and Gatewood suggest that the thromboses are perhaps due to the throwing down of the dye in colloid suspension in the blood, and the presence of the dye in this colloid form in the blood stream produces the thromboses. Rosenthal and White,[12] in their recent report advocating the use of the disodium phenoltetrabromphthaleinsulphonate test for hepatic function, state that "irritation of the vein wall is frequent, and occasionally systemic reactions occur in the use of phenoltetrachlorphthalein."

2. *Local Reactions Occurring at the Site of Injection.*—Attention has not infrequently been called to local inflammatory reactions expressed by induration, infiltration, redness, tenderness and pain at the site of injection of phenoltetrachlorphthalein. Abel and Rowntree[13] and other early workers noted the irritating action of the disodium salt, when injected subcutaneously. Rosenthal diluted the dye in physiologic sodium chlorid solution and washed the vein with the same fluid after injection, in order to avoid the local irritating action of the dye. Friedenwald and Gantt held a piece of gauze firmly around the needle when it was being withdrawn, in order to prevent any return leakage. Bloom and Rosenau reported six local reactions in twenty-seven cases (22 per cent.).

3. *Chills.*—The earliest cases of chills reported were possibly due to the use of distilled water as a diluent for the dye instead of physiologic sodium chlorid solu-

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[3] Rosenthal, S. M.: An Improved Method for Using Phenoltetra- [illegible] Function Test, J. Pharmacol & Exper. Therap. 19: [illegible] New Method of Testing Liver Function with [illegible] J. A. M. A. 79: 2151 (Dec. 23) 1922; A New Method of Testing Liver Function with Phenoltetrachlorphthalein, Second Communication, Bull. Johns Hopkins Hosp. 33: 432 (Dec.) 1922.

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[7] Chesney, A. M.; Marshall, E. K., Jr., and Rowntree, L. G.: Studies in Liver Function, J. A. M. A. 63: 1533 (Oct. 31) 1914.

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[10] Williams, P. F.: Phenoltetrachlorphthalein Test for Liver Function in Pregnancy, Am. J. Obst. & Gynec. 4: 26 (July) 1922.

[11] Friendenwald, J., and Gantt, W. H.: Some Observations on the Phenoltetrachlorphthalein Test as a Means of Determining Liver Function, Am. J. M. Sc. 166: 519 (Oct.) 1923.

[12] Rosenthal, S. M., and White, E. C.: Clinical Application of the Bromsulphalein Test for Hepatic Function, J. A. M. A. 84: 1112 (April 11) 1925.

[13] Abel, J. J., and Rowntree, L. G.: Pharmacologic Action of Some Phthaleins and their Derivatives, with Special Reference to their Behavior as Purgatives, J. Pharmacol. & Exper. Therap. 1: 231 (Aug.) 1909.

tion. Sisson[6] reported a rise of temperature as high as 101 F. in one case in his series. The occasional occurrence of chills following the injection of the dye was noted by other earlier workers. In our series two chills were encountered in twenty-seven cases (7.24 per cent.). In one case the temperature rose as high as 102 F. by mouth. The chills occurred from twenty to thirty minutes after the injection. Maurer and Gatewood also reported the occurrence of chills with a rise in body temperature. They reported one case in which the temperature rose to 105 F. forty minutes following the injection. It is probable that chills have been encountered by other workers but not mentioned.

In our work we encountered ten untoward reactions (thromboses, local reactions and chills) in twenty-seven cases (37 per cent.) subjected to the phenoltetrachlorphthalein test. Because of these reactions, the number of clinical injections in the series we reported was curtailed.

4. *Deaths.*—Rowntree, Hurwitz and Bloomfield[1] reported one case of unexplained death, occurring six days after the injection of the dye. Maurer and Gatewood recently reported three patients in their series who died from two to seven days after the test was made. Two of the three cases showed recent thromboses, the dye being qualitatively demonstrated in one thrombus. These deaths may possibly have been caused by the production of fatal thromboses as a result of the injection of the dye.

5. *Other Symptoms.*—1. A sensation of dryness is a common occurrence from ten to fifteen minutes after the injection. The patients put out their tongues, lick their lips and complain of dryness of the mouth.

2. Pain over the liver region was complained of occasionally.

3. Purgative action lasting six days was reported by early workers. In our clinical series, little, if any, laxative effect was noted.

CLINICAL AND EXPERIMENTAL WORK INDICATING STRAIN ON OR DAMAGE TO THE LIVER

Early workers reported that the dye could be repeatedly injected in large quantities, over a period of many months, without any demonstrable ill effects to the animal. Bloom and Rosenau,[4] in experimental and clinical studies, called attention to a constant increase in the bilirubin content of the blood, following the injection of the disodium salt of phenoltetrachlorphthalein. Normal as well as abnormal cases showed uniformly a definite increase in the indirect van den Bergh test. When the van den Bergh test was positive by the indirect method alone, or by the direct and indirect, before the injection of the dye, there was always a uniform increase in the intensity of the van den Bergh reaction, in the direct and indirect, after the injection. The increase in the van den Bergh reaction was found at the end of one hour following the injection, and disappeared within twenty-four hours. This temporary hyperbilirubinemia seemed to bear no relation to the severity of the impairment of the liver function, as measured by the dye retention. Interpreting this hyperbilirubinemia, it was stated: "We believe that the transient bilirubinemia subsequent to the injection of phenoltetrachlorphthalein was due to the fact that the liver, having an apparently specific, excretory action toward the dye after it has been injected intravenously, cannot excrete bilirubin or its precursors which are brought to it until all of the dye has been eliminated. We have no evidence that this transient bilirubinemia is indicative of anything more than a temporary functional blockade of the bilirubin excreting power of the liver."

Because of this hyperbilirubinemia occurring constantly following the injection of the dye at that time, we felt that one should be cautious in injecting the dye in cases in which there had been a great amount of liver damage or injury. It was felt that in cases of severe liver damage, such as acute yellow atrophy of the liver, chloroform poisoning or severe cirrhosis, the injection of the dye might possibly add such a burden to the liver, in the attempt at removal from the blood stream, as to result in the subsequent death of the patient, as a result of hepatic insufficiency. A good parallel is the addition of a small strain to a badly damaged heart muscle, with a very small amount of reserve, with the death of the patient.

Recently Ottenberg and Abramson[14] have reported the production of liver necrosis in rabbits following the injection of a 5 per cent. solution of either phenoltetrachlorphthalein or tetrabromphenolphthalein in doses of 0.3 to 0.4 gm. per kilogram of body weight. Larger doses killed the rabbits at once or within fifteen minutes, with "acute convulsive symptoms." They call attention to the fact that the doses needed to produce severe symptoms and liver lesions were enormously larger than those used in the phenoltetrachlorphthalein liver function test (0.005 gm. per kilogram being equal to the clinical dosage). These observations give added significance to the observations of the occurrence of a hyperbilirubinemia, following the injection of phenoltetrachlorphthalein.

ATTEMPTS TO MAKE PHENOLTETRACHLORPHTHALEIN NONIRRITATING ON INJECTION

Phenolsulphonephthalein injected subcutaneously, intramuscularly or intravenously is followed by no local reactions or thromboses. Phenolphthalein also is nonirritating. These facts suggested that the chlorin radical might be responsible for the irritating nature of the dye. Attempts were made to neutralize a possible theoretical liberation of chlorin in the tissues, or to modify the hydrogen ion concentration of the injected dye.

The disodium salt of phenoltetrachlorphthalein was diluted in the following sterile solutions:

1. Distilled water.
2. Physiologic sodium chlorid solution.
3. Sodium bicarbonate, 5 per cent. solution.
4. Sodium carbonate, 5 per cent. solution.
5. A phosphate buffer solution.

A phosphate buffer solution, when added to the dye, decolorized it and also resulted in the formation of a white precipitate. Because of this, the buffer solution was not used in the following experiments.

Rabbits' ears were used for the injection of the dye diluted in the various solutions to determine whether or not the character of the solvent might modify the irritating nature of the dye. The dye was made up in various dilution strengths and then injected superficially in the rabbit's ear. Injection was stopped when a small wheal had been produced. A control injection of the diluent was also made. The results obtained are given in Table 1, the percentage strengths being the actual dye contents of the solutions.

From the table it can be seen that the disodium salt of phenoltetrachlorphthalein, dissolved in water, 5 per cent. sodium bicarbonate, 5 per cent. sodium carbonate, or physiologic sodium chlorid solution is irritating and capable of producing inflammation on injection in the rabbit's ear, even in dilutions as low as 0.15 per cent. If one applies these results to the carrying out of the test on human beings, one would perhaps be justified in assuming that the disodium salt of phenoltetrachlorphthalein, even when diluted 1 part of dye to 30 parts of physiologic sodium chlorid solution, will possibly still be capable of producing irritation and inflammation at the site of injection. In the clinical test, a man weighing 70 kg. (150 pounds) is given 7.5 c.c. of the dye (1 c.c. containing 50 mg.). To inject 7.5 c.c. of the dye, it would be necessary to use over 200 c.c. of a diluent, to make up the 0.15 per cent. solution. The impracticability of such a procedure obviously eliminates this method from clinical use.

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[14] Ottenberg, Reuben; and Abramson, H. A.: Production of Liver Necrosis by Tetrachlorphenolphthalein and Tetrabromphenolphthalein, J. A. M. A. 84:800 (March 14) 1925.

The untoward results described above have not been confined to the use of phenoltetrachlorphthalein. The *introduction of tetrabromphenolphthalein for cholecystography* has been followed by severe reaction on the part of some of the patients subjected to this test. In my own early experience with this substance, its intravenous injection into a middle aged man, for the purpose of obtaining a gallbladder shadow as a diagnostic aid, was followed within a few minutes by collapse, with a very feeble, rapid pulse. He recovered after hospitalization, but his condition following the injection was alarming.[15]

Whitaker and Milliken,[16] who used tetrabromphenolphthalein in only from 1 to 2 per cent. solution in physiologic sodium chlorid solution, asserted that they had only one reaction with headache, chills and vomiting in a series of twenty cases. Graham, Cole and Copher [17] have recently reported that a 12.5 per cent. solution of sodium tetra-iodophenolphthalein, which they use in cholecystography, at times produced induration at the site of injection. Thromboses following the injection of tetrabromphenolphthalein have also been reported by Smithies and Oleson.[18] Because of the toxicity of these substances following inravenous injection,[19] Menees and Robinson [20] have successfully administered tetrabromphenolphthalein by mouth, in capsules treated with formaldehyd to render them insoluble in the stomach, and Stewart [21] has obtained satisfactory results by the administration of tetra-iodophenolphthalein into the jejunum through a duodenal tube.[22] It has been concluded that "in spite of the toxic properties of the drug no fatal results due to its administration have been reported, but there is no doubt that much harm and even fatalities might be caused by overdosage." [19]

TABLE 1.—*Reaction Observed in the Ears of Rabbits Twenty-four Hours After Injection of Phenoltetrachlorphthalein Dissolved in Various Solutions*

Diluents	Diluent Unchanged 5%*	2 5% Sol. Dye	1 2% Sol Dye	0 6% Sol. Dye	0 3% Sol Dye	0 15% Sol Dye
Distilled water.....	No reaction	Necrotic ulcer	Slight ulceration	Well marked infiltration	Infiltration	Slight infiltration
5% sodium bicarbonate	No reaction	Necrotic ulcer	Slight ulceration	Well marked infiltration	Infiltration	Slight infiltration
5% sodium carbonate	No reaction	Necrotic ulcer	Slight ulceration	Well marked infiltration	Infiltration	Slight infiltration
Physiologic sodium chlorid solution	No reaction	Necrotic ulcer	Slight ulceration	Well marked infiltration	Infiltration	Slight infiltration

* Five per cent. solution of disodium salt of phenoltetrachlorphthalein contained in ampules put out by Hynson, Wescott and Dunning

It would therefore appear that the bromin and iodin phthalein compounds used in cholecystography possess to greater or lesser degree the irritating and toxic properties of phenoltetrachlorphthalein. I cannot help but advise against the indiscriminate injection of these halogenated phthaleins, especially because I feel that additional chemical research and further animal experimentation will probably result in the introduction of *compounds that are as innocuous as phenolsulphonephthalein* has proved to be and as Rosenthal and White [12] claim disodium phenoltetrabromphthaleinsulphonate to be. They recommend the use of disodium phenoltetrabromphthaleinsulphonate as superior to phenoltetrachlorphthalein for liver function work, in that it is a more delicate test and is nonirritating. In fifty tests, on human beings, no untoward effects of any kind were experienced.

SUMMARY

Following the use of phenoltetrachlorphthalein, thromboses, local inflammatory reactions at the site of injection and chills have been encountered by many observers. Several deaths probably due to its use have been reported.

Clinical and experimental work indicates the possibility of strain or damage to the liver, following injection of the dye.

Attempts to make phenoltetrachlorphthalein nonirritating on injection have failed.

Many observers have noticed severe toxic reactions following the use of tetrabromphenolphthalein and tetra-iodophenolpththalein.

The toxicity of the halogenated phthalein compounds should lead to caution in their use. Indiscriminate administration and overdosage should be avoided.

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[15] Dr. J. Friedman has kindly given me permission to report this case.

[16] Whitaker, L. R, and Milliken, G: A Comparison of Sodium Tetrabromphenolphthalein and Sodium Tetraiodophenolphthalein in Gallbladder Radiography, Surg., Gynec & Obst **40:** 17 (Jan) 1925

[17] Graham, E A; Cole, W. H., and Copher, G H· Cholecystography, the *Use of Sodium* Tetra-Iodophenolphthalein, J. A M A **84:** 1175 (April 18) 1925

[18] Smithies, Frank; and Oleson, R B.: Aseptic Irritative Phlebitis, Following Intravenous *Injection of Sodium Salt of* Tetrabromphenolphthalein, J. A. M. A. **84:** 1494 (May 16) 1925

[19] The Limits of Safety in Administration of Tetrabromphenol phthalein, editorial, Am. J. Roentgenol. **13:** 371 (April) 1925.

[20] *Menees, T O, and Robinson, H. C·* Oral Administration of Sodium Tetrabromphenolphthalein: Preliminary Report, Am J. Roentgenol **13:** 368 (April) 1925

[21] Stewart, W H Administration of Tetra Iodophenolphthalein through Duodenal Tube, Am. J Roentgenol **13:** 378 (April) 1925

[22] Since this article was prepared, two reports of the successful oral administration of sodium tetra iodophenolphthalein in cholecystography have appeared Einhorn, Max; Stewart, W H, and Ryan, E. J: Experiences with Cholecystography, M. J & Rec. **122:** 77 (July 15) 1925 Graham, E A, Cole, W H, Moore, Sherwood; and Copher, G H Cholecystography *Oral Administration of Sodium* Tetra Iodophenolphthalein, J A M A **85:** 953 (Sept 26) 1925 Satisfactory gallbladder pictures were obtained, and this method of oral administration was found to be relatively nontoxic

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Insanity and Marriage.—When there is evidence of insanity or epilepsy in both stocks, or a general neuropathic tendency indicative of mental instability, the liability to dementia praecox is greatly increased in the descendants; therefore in advising (as one often has to do) in regard to marriage, evidence pointing to these special forms of mental disease in both stocks, on one side, still more on both sides even if shown in collaterals, induces one to say definitely from a eugenic point of view that it would be inadvisable—inasmuch as the risk of an insane inheritance for the children is so much the greater—Mott, Frederick: The Harveian Oration on Some Developments of Harvey's Doctrine, "Omne vivum ex ovo," *Lancet*, Oct. 24, 1925.

THE GALLBLADDER AS REVEALED BY THE ROENTGEN RAY

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More than twenty years ago when Rieder gave the first bismuth meal, it was observed that the stomach was not located horizontally in the epigastrium, but that, in the average person, it hung vertically on the left side of the abdomen, its lower pole reaching to the level of the navel and usually below the navel. This observation was not immediately accepted by clinicians, because it did not seem to agree with the observations made, over a long period of years, by surgeons doing abdominal operations and by pathologists while making necropsies. The unique value and accuracy of roentgen-ray stomach visualization is now universally accepted, however.

The visualization of the gallbladder by the use of the tetra-iodophenolphthalein test, as brought out by Graham and his co-workers, promises to be an equally important milestone for clinical medicine. The oral administration now permits of universal application of this test without danger or discomfort to the patient.

During the last four months we have used the tetra-iodophenolphthalein test by the oral method to visualize the gallbladder in 500 routine abdominal roentgen-ray examinations. By perfecting the technic, we have been able to obtain, in the last 200 cases, a distinct gallbladder outline in more than 90 per cent. of the normal cases. A comparative study of the films obtained in this series shows that the normal gallbladder varies so greatly in location that we are impelled to ask: "Where is the normal gallbladder?" In answer thereto, we feel justified in saying that in the great majority of persons the gallbladder is not in the gallbladder region as clinically understood. This rather bizarre statement will demand some further explanation and discussion.

The gallbladder region, as given in Morris' Anatomy, is the right hypochondrium and epigastrium. The longitudinal line that separates the right hypochondrium from the epigastrium is said to cut the gallbladder. The lower limit of the right hypochondrium and epigastrium is the line connecting the tenth costal cartilages, and this line bisects the body of the second lumbar vertebra.

In my series of cases, the gallbladder extends either partly or wholly below the lower limits of the hypochondriac and epigastric regions in 75 per cent. of the cases. Usually it descends into the umbilical region but quite frequently into the right lumbar region.

Furthermore, in the 25 per cent. of the cases in which the gallbladder is found above the second lumbar vertebra, that is, in the so-called gallbladder region, it does not always lie in the line that separates the hypochondrium and epigrastrium, but may lie far to the right of this line and may be found outward as far as the axillary margin of the abdomen. The clinical importance of this observation can be readily understood. I have recently observed a case of intermittent hydrops of the gallbladder in which the patient complained of pain in the axillary margin of the hypochondrium (that is, between the hepatic flexure of the colon and the right kidney), and the dye test in this case revealed a distended gallbladder, the fundus of which approached the axillary margin of the chest. In another instance, a palpable and freely movable tumor mass was found in the axillary margin of the right hypochondrium, approaching the right kidney region. Operation revealed a hydrops of the gallbladder. Such a lateral lying gallbladder may cause pain, tenderness or a tumor mass simulating a loose kidney, kidney tumor, tumor of the hepatic flexure or disease about an ascending retrocecal appendix.

Of those gallbladders found below the right hypochondrium and epigastrium, that is, below the level of the second lumbar vertebra, some extended only to the level of the third lumbar vertebra, but a surprisingly great number were found with the fundus approaching the fourth lumbar vertebra or level of the umbilicus and crest of the ilium, and some extended into the lumbosacral angle and to the level of the fifth lumbar vertebra. In most instances the fundus of the gallbladder seemed to point toward the midline of the body and the navel, but in a few instances the fundus was directed outward, approximating the anterior superior spine of the ilium. In one case I found a gallstone lying just above the anterior superior spine. Before giving the dye I had overlooked this stone, as I interpreted it as fecal material in the ascending colon, but the administration of the dye showed the location of the gallbladder and led to a correct diagnosis.

A very striking observation is the fact that the low gallbladders frequently cast their shadows very close to the spine and in some instances overlap the spine. Certainly, many gallstones have been overlooked in the past, being obscured by the shadows of the spine. This brings us to a very important point in technic. In all the cases included in this series, the roentgen-ray examination was made with the patient lying prone, and the tube was centered vertically over the gallbladder, which would avoid any upward or downward (cephalad or caudad) projection of the gallbladder shadow. However, in order to avoid superimposition of the shadow of the spine on the shadow of the gallbladder, it was necessary in many instances to rotate the body slightly to the left. In spite of this position, however, we still obtained some gallbladder shadows partly obscured by the shadow of the spine, which would prove that a large percentage of gallstone shadows have been obscured in this way.

To determine the range of mobility of the gallbladder, films were made also in the supine and erect postures. A comparison with the routine films made prone showed that the gallbladder moves upward from one-half to 1 inch, when the patient changes from the prone to the supine position. When the patient assumes the erect posture, the gallbladder descends from 1 inch to 1½ inches. This excursion of the gallbladder is least in well nourished or stout persons having good muscular tone. In the thin, relaxed persons, the difference between the erect and the recumbent postures is often surprisingly great, sometimes as much as 3 or 4 inches. Of course, a certain part of the excursion of the gallbladder is due to the movement of the liver and diaphragm, which always accompanies changes in posture.

A diseased gallbladder whose fundus reaches to or extends below the navel may clinically simulate a diseased appendix. Routine roentgen-ray examinations of the colon have shown us that the appendix is usually much below McBurney's point and in most instances is seen deep in the pelvis, but a diseased appendix may refer its pain to the umbilical region, which will explain the frequent difficulty in differentiating gallbladder and appendix disease.

A very low gallbladder, if diseased, may even simulate disease of the right ovary.

The fact that gallstones may be found below the right hypochondrium and epigastrium is not a new observation. Carman, in his book on "The Roentgen Diagnosis of Diseases of the Alimentary Tract," which was written before the introduction of the roentgen-ray visualization of the gallbladder, states that gallstones may be found as low as the crest of the right ilium, and that the entire region from the ribs to the ilium should be covered. However, I do not believe that the great variation of the position of the gallbladder has been sufficiently emphasized, as it was formerly not possible to obtain and to study the gallbladder outline under normal conditions.

Students have been taught to palpate the gallbladder high under the ribs. Roentgen-ray operators, in making fluoroscopic palpations of the abdomen, usually palpate too high for the gallbladder. Fluoroscopic palpations are very valuable diagnostic procedures, especially if the colon is filled by a previous barium meal. The location of the transverse colon, whether high or low, will be the dividing line between the gallbladder region and the appendix region. The hepatic flexure is not a safe guide, as the gallbladder will frequently descend along the mesial aspect of the hepatic flexure to come in contact with a sagging transverse colon.

The variations in the position of the gallbladder are of importance chiefly to the clinician. The surgeon has his landmarks to guide him and will readily find the gallbladder irrespective of its location. The surgeon states that he usually is obliged to pull the gallbladder from under the liver; but at operation the patient is supine and (except when local anesthesia is used) is unconscious. It is, furthermore, likely that preparation for operation, nervous excitement, fasting, struggling or some action of the anesthetic may explain the small, high, contracted gallbladder so frequently observed at operation. It is interesting to note in this connection that before the introduction of the bismuth meal, no surgeon had noted or commented on the position of the normal stomach, as we now understand it.

If the tetra-iodophenolphthalein method of gallbladder visualization does nothing more than to give us the size, shape and position of the gallbladder, it will serve an important purpose in gallbladder diagnoses; but this method has a much wider clinical application.

We are now employing this method as a routine in every complete abdominal examination and are obtaining gallbladder outlines in 90 per cent. of the normal cases. From the standpoint of exclusion (and many roentgen-ray abdominal diagnoses are made partly by exclusion), the clinical value and importance of being able to see the location, size and shape of the gallbladder can hardly be overestimated. In many cases (although not in all) the location of the patient's pain bears a direct relation to the location of his lesion, and the location of the gallbladder with reference to the location of the pain can thus be determined. In another group of cases, a tender point in the abdomen will correspond with the location of the lesion, and the position of the gallbladder with reference to the tender point can be studied. In another group of cases, there may be a palpable abdominal tumor present, and again this method will enable us to determine the relation of the gallbladder to the location of the tumor mass.

It frequently happens that a shadow appears on the roentgenogram that cannot be identified. By obtaining an outline of the gallbladder, we can note whether this shadow corresponds with the position of the gallbladder. If the suspicious shadow corresponds with the shadow of the gallbladder, oblique and lateral views can be made in order to prove whether the shadow falls within the gallbladder outline or whether in front of or behind it. If the suspicious shadow does not correspond in location with the gallbladder shadow, gallstone is immediately and positively excluded.

Since the dye does not enter the gallbladder freely in the presence of a lesion of the gallbladder or bile ducts, the clinical deductions above mentioned may not always be possible. Frequently we obtain only a very faint gallbladder outline which must be carefully searched for, and such a faint outline is always suggestive of a gallbladder lesion. A total absence of the gallbladder outline will prevent the carrying out of the foregoing tests, but the absence of the gallbladder shadow points, in itself, to the gallbladder or liver as the possible site of the lesion.

In those cases in which we have obtained no shadows in the gallbladder region suspicious of gallstones and in which the tetra-iodophenolphthalein test has given a very distinct outline of the gallbladder, and which appears of average size (that is, not unduly distended or contracted) and which does not appear deformed or irregular, we have felt safe in reporting a normal gallbladder. Great distention of the gallbladder would indicate a hydrops. Deformity of the outline would indicate inflammatory changes in the walls of the gallbladder or possibly adhesions about the gallbladder. We have recently seen several cases in which it was horizontally placed and badly deformed, and in which operation revealed a diseased gallbladder adherent to the under surface of the liver. A very interesting condition is that in which the gallbladder outline shows only faintly and is not of uniform density, showing one or more dark areas. These dark areas have been proved to be transparent gallstones which prevent the dye from completely filling out the gallbladder.

When the gallbladder shows only faintly or fails to show at all, our suspicion is directed to it, although we cannot immediately make a diagnosis of a gallbladder lesion without further study. Advanced disease of the liver, such as cirrhosis (which would prevent the normal secretion of the bile) must be first excluded. Then, the failure of the gallbladder to fill with the dye may be due to obstruction of the bile passages by a stone, by thickened mucus or by swollen or edematous walls. The presence of inspissated mucus or bile in the gallbladder would prevent the dye from entering. When the gallbladder fails to fill with the dye, the test should be repeated in order to check up the findings and in special cases, when the clinical aspects of the case do not seem to confirm the diagnosis of a gallbladder lesion, the intravenous injection of the dye may be resorted to. If diseases of the other abdominal organs have been excluded, as far as is possible by the roentgen ray and by a thorough clinical examination, the failure of the gallbladder to visualize, would justify a diagnosis of a gallbladder lesion, especially if the patient presents a confirmatory clinical history. A close coöperation between the clinician and the roentgenologist is essential for a correct diagnosis, as is true of all roentgen-ray work.

The fact that in approximately 10 per cent. of the normal cases the gallbladder may fail to show would lead to a possible error of 10 per cent. Repetition of the test in doubtful cases may, however, reduce this percentage of error. It is furthermore possible, that some of the gallbladders which visualize and are reported normal may be found to be diseased, which fact may increase the chance of error. Much clinical study and further statistical observation are necessary before the final diagnostic accuracy of this method can be definitely stated.

Of those cases in my own series which were reported normal and which later came to operation, no errors have been noted up to this time, although only a small percentage have been checked by operation. Of those cases in which the gallbladder failed to visualize and a gallbladder lesion was reported, only one error has been noted, although again the percentage of cases in which operation has been performed has not been very great. In all of the operative cases in which gallstones were reported, gallstones have been found.

One strikingly uniform observation in my series of cases, which would seem to prove the basic rule that abnormal or diseased gallbladders do not fill with the dye as completely and uniformly as do the normal gallbladders, *is the fact that in those cases in which a preliminary roentgenogram has shown the presence of gallstones,* the subsequent dye test would either show a failure of the gallbladder to fill or would reveal a faint and incompletely visualized gallbladder. When the gallstone blocks the cystic duct, the failure of the gallbladder to fill may be purely mechanical, but in the many gallstone cases in which the ducts are not blocked, the failure of the gallbladder to show in the usual way must be attributed to associated disease of the gallbladder or bile passages.

Further evidence on this point has been obtained from a study of the results of the dye test when made on slightly or deeply jaundiced patients. It has been our uniform finding that the gallbladder will fail to visualize in the presence of jaundice, irrespective of whether the jaundice is obstructive or infectious. In this connection it may be well to bring out the fact that no untoward effects have been observed following the administration of the dye to jaundiced patients.

Prior to the introduction of the tetra-iodophenolphthalein test, roentgenologists have attempted to diagnose gallbladder disease by obtaining a faint outline of the gallbladder. When the gallbladder outline was visible, a thickened or distended gallbladder was reported. In order to test the accuracy of this method, we have attempted to identify the gallbladder shadow on the preliminary film, then checking the finding after administering the dye. In the majority of instances, the preliminary identification of the gallbladder shadow was incorrect, and often the gallbladder was located some distance from the suspected shadow. It is therefore apparent that many inaccuracies have in the past attended such a method of diagnosis. The use of a small cone (as was formerly recommended) would, for obvious reasons, increase the chance of error.

In every case in which the gallbladder fails to visualize, it is of prime importance to make an immediate fluoroscopic examination of the abdomen to search for undissolved capsules. Irrespective of the type of coating used, it frequently happens that the capsules will fail to dissolve. If the majority of the capsules are undissolved, the test should be repeated a second or even a third time. We have thus been able to visualize gallbladders in certain cases in which a cholecystitis had been erroneously diagnosed on the basis of a supposedly absent gallbladder shadow.

Irrespective of the thickness of the abdomen, all roentgenograms of the dye-filled gallbladder have shown an unusually distinct outline of the right kidney, due possibly to the presence of a small amount of the dye in the kidney. The relations of the gallbladder shadow to that of the right kidney have been so varied as to deserve comment. The gallbladder shadow may be well above the kidney shadow, may lie directly in front of the renal pelvis, or may be mesial or external to the kidney outline. Not infrequently, however, the gallbladder shadow has been found to be well below the renal pelvis or even below the lower pole of the kidney. Gallstone shadows may, therefore, be much lower than shadows of renal calculi.

Certain patients in this series have presented, as their chief complaint, pain in the right hypochondrium or directly under the right rib margin, suggesting gallbladder disease. In [illegible] of such cases an apparently normal [illegible] has been found at or near the level of the navel and quite a distance below the site of the pain. In many of these cases the completed roentgen-ray examination has revealed nothing abnormal except a general visceroptosis. The pain in the hypochondrium must, therefore, be attributed to traction of the prolapsed viscera. The dye test will thus serve to exclude gallbladder disease in this very prevalent type of case.

Doctors Building.

MIXED CELL TUMOR OF THE PALATE

REPORT OF CASE *

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Tumors of the palate, composed in part of epithelial-like cells, with noteworthy hyaline and mucoid degeneration of both these cells and the connective tissue framework, frequently have been classified as endotheliomas, especially by the earlier writers. The tendency now is to consider them as arising from the embryonic clefts. It is also generally believed that they consist of epithelial cells with varying proportions of connective tissue, cartilage and other tissues characteristic of this region. They are for the most part benign, since as a rule they do not infiltrate, are encapsulated and do not produce metastases.

REPORT OF CASE

History.—A woman, aged 32, came to the surgery clinic of Northwestern University Dental School, Feb. 13, 1925, for advice concerning a swelling of the palate of four years' duration. At first no larger than a small marble, it gradually increased in size, but at no time did it give rise to actual pain or soreness. From a place to the right of the midline and opposite the molar region, it spread in all directions until it occupied most of the space between the molar teeth. About two years before she was admitted, the patient consulted a physician, who lanced this swelling, producing a flow of blood that lasted for several minutes. Since that time, the mass had increased in size, as before, but it was not until three or four months before we saw her that the tumor, because of its size, became embarassing.

Examination.—A tumor mass, with a smooth covering of mucous membrane and about the size of a large walnut, extended from the gingival border of the right molars to within one-fourth inch (6 mm.) of the left molars, and from the posterior extremity of the hard palate to within 1 inch (25 mm.) of the gingival border of the incisors. There was an overlapping of the sides of the tumor against the teeth and the tissues of the palate and it was neither painful nor tender. There was no evidence of any metastasis, and the patient was otherwise in good health.

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* Read before the Section on Stomatology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

Operation.—The patient was admitted to St. Luke's Hospital, Chicago, February 26, and the tumor was shelled out *en masse* on the following day under ether spray, general anesthesia by Dr. H. A. Potts. It was necessary to remove a considerable portion of the mucous membrane of the palate with the tumor; the site of the tumor was allowed to fill in with granulation tissue over which epithelium gradually spread. The tumor mass was enclosed by a fibrous tissue capsule and was attached to the palate by a flat, wide pedicle to the right of the median line. At this place, there was noteworthy absorption of the bone of the palate; in the center of this region, the bone was entirely missing and this defect was 3 mm. in diameter.

Microscopic Examination.—Sections of this tumor stained with hematoxylin and eosin, hematoxylin and van Gieson's fluid, contained nodules and cords of round and oval epithelial cells in an abundant connective tissue framework. In places, the intercellular substance of the connective tissue matrix was so abundant as to form distinct bands. There were many regions of mucoid degeneration which took the blue stain in a diffuse manner. In such regions, the epithelial cells were swollen and the nuclei were crowded toward the periphery of the cell. In other places, these cells had an arrangement suggestive of gland forms. No mitotic figures were seen. Blood vessels were abundant and comparatively large.

SUMMARY

Although this tumor did not contain the variety of tissues found in the mixed tumors of the mouth, it seemed to belong to this group. Its unilateral origin, the tendency of the cells to undergo hyaline and mucoid degeneration and the arrangement of the epithelial cells in cords, nodules and even glandlike aggregations all are in favor of such an identity. Such tumors, while primarily benign, occasionally become malignant; on this account alone they should be removed as early as possible.

ABSTRACT OF DISCUSSION

Dr. George M. Dorrance, Philadelphia: If we study the normal roof of the palate microscopically, we shall notice that there is a large area of fibrous tissue surrounding the little glands in the roof of the mouth. It is quite easy to conceive that, as in the other type of tissue elsewhere in the body, this is glandular tissue surrounded by fibrous tissue. These tumors have not been satisfactorily classified. We used to call them fibromas. I do not think that tumors can be classified to suit all of us. It is hard to be dogmatic and say that it is a fibroma, an adenoma or a myoma. We are pretty sure when it is a carcinoma, but we are not sure of the other tumors. The treatment of this case is ideal. The tumor was taken out entirely, and more than likely there will be no recurrence. At the Philadelphia General Hospital, where we have a group of seven men, including a roentgenologist and a pathologist, we are continually having discussions as to where to classify these tumors. Until such time as the pathologists and the clinicians agree, we shall have to classify them with the old group of fibromas and adenomas. However, I find that these tumors are very rare. The ordinary osteoma is common. The results of this seem to me to follow along with hypertrophy of the gums. We do not know what causes hypertrophy of the gums. We know when it occurs, we remove the tumors completely and they do not return. The same is true of this tumor.

Dr. Robert H. Ivy, Philadelphia: My experience has been limited to two tumors of this type, one confined to the soft palate and the other to the hard palate. Both of them exhibited microscopic characteristics identical with this one of Dr. Boyko's. The sections from the first tumor, which occurred about twelve years ago, were submitted to practically all the leading pathologists in Philadelphia, and there was great disagreement as to what it was. Several of them felt that it was endotheliomatous in nature, and it was as such that I reported the tumor, but I feel convinced now that these cells are epithelial and that we must not classify them as endotheliomas, in which group a great many tumors have been put when they could not be definitely assigned elsewhere.

Dr. F. A. Figi, Rochester, Minn.: I hardly see how this tumor can be classified as either an adenoma or a fibroma. The possibility of considering it a fibroma is ruled out by the marked preponderance of epithelial elements present, while the atypical character of these cells precludes its being an adenoma. I would say rather that it was a mixed tumor or an adenocarcinoma. Both of these frequently occur in this region, and both are comparatively benign types of malignant tumor. They are both definitely malignant, however. They may occur either in the hard or in the soft palate and often reach an enormous size. We have removed them from this region as large as 8 or 9 cm. in diameter, after ligation of the external carotid artery on either side. I think this case was handled ideally from the standpoint of treatment.

Dr. Edward H. Hatton, Chicago: The fact should not be lost sight of that the structures of the palate and the parotid region of the neck, and to a less degree of the lips and the tongue, are intimately connected with the embryonic gill clefts, and that in the closing of these gill clefts abundant opportunity is offered for the deposition of cell rests containing rudimentary epithelium, cartilage, fibrous tissue and sometimes glands. Tumors arising from these rests are unilateral, slow growing, stimulated to growth at the time of puberty or afterward, and develop much as this one did. On this account I am inclined to believe that the mixed cell classification is correct and that these cells are epithelial cells.

Dr. Carl W. Waldron, Minneapolis: My experience has been limited to two cases, both of which were somewhat interesting. In one case, the mixed tumor of the palate was no larger than the diameter of a fountain pen it was situated in the center of the hard palate at about the junction of the maxillary and palatal bones. It had developed slowly over a period of three or four years at the site of an injury made by a lead pencil some fifteen years before. It was very readily removed without recurrence. The other case was a somewhat unusual one. A patient came to our clinic with very marked protrusion of the upper six anterior teeth, so marked that the upper lip was forced upward beneath the nose, and the lip could not be closed, even on strongest muscular effort. The whole anterior portion of the alveolar process with the teeth was resected *en masse*, and a very favorable result from the standpoint of a denture was secured. About a year later she returned, complaining that the denture did not feel comfortable posteriorly on the palatal side of the tuberosity. At this site she had been operated on twice previously and had been told that there was dead bone. Fortunately, at the first appearance of the patient, we took a cast of this unusual deformity, which showed a slight asymmetry in this palatal region. On reexamination, this asymmetry was more pronounced. Palpation seemed to show very definite fluctuation, and on incision some material came away, not a liquid exudate or purulence, but rather like softened lymphoid tissue, such as one might encounter on incising a tonsil capsule after its removal in a broken down tonsil. I collected this for examination, and the report was a mixed tumor. I operated again a week or two later, but in this instance the swelling was so small that to the best of my ability I could not determine a capsule, so I excised, I felt, sufficiently widely to remove the tumor. However, it may be subject to recurrence, and I shall check it up as soon as I return.

Dr. G. V. Boyko, Passaic, N. J.: As Dr.Hatton has brought out in his discussion, the characteristic structure of this tumor and the fact that there is no definite classification for it make it seem most appropriate to place it in the "mixed tumor" class.

Smallpox in Connecticut.—During the years 1923 and 1924, 152 cases of smallpox with six deaths were reported in Connecticut. Five of these deaths occurred in persons who had never been successfully vaccinated and one had been vaccinated more than seven years before onset. In the first group mentioned there were ninety-six cases; in the second group, twenty-four cases. One patient had had smallpox previously, and three patients had been vaccinated within seven years.—*Pub. Health Rep.* **40**:1811 (Aug. 28) 1925.

NUTRITIONAL KERATOMALACIA

REPORT OF CASE

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The occurrence of keratomalacia as a result of faulty diet has been established for human beings as well as for animals.[1] While numerous observers realized early that the disease had something to do with nutrition, and many conceived a definite relationship to the diet, it was not until the striking animal experiments of McCollum and his co-workers,[2] and those of Osborne and Mendel,[3] that this disease could be classified as an avitaminosis. It is now generally conceded that it is essentially a deficiency disease following deprivation of the fat soluble A vitamin. Groups of cases as have been described have generally occurred in periods of famine or in countries having grossly inadequate food resources. The large series of cases collected by the Danish Ophthalmological Society during the period from 1909 to 1920[4] were attributed to the peculiar circumstance of a dairy country exporting the most important products providing the fat soluble A factor.

McCollum's[5] recent experiments indicate that other factors besides the amount of fat soluble A contribute to the production of this disease. The total amount of salt mixture and its composition is an important factor. The interrelationship between certain nutritive principles in the dietary may play a rôle. These experiments may explain the occurrence of keratomalacia in infants who have not been completely deprived of fat soluble A. Thus, the patients reported by Ross[6] had had previous diets of condensed milk, a food not entirely lacking in this specific vitamin.

A study of the literature reveals numerous similar instances. Very frequently the history of previous digestive disturbance is reported. That functional disturbance of the digestive tract produces changes in the intermediary metabolism is well recognized. Meyer[7] found a negative salt balance in infants suffering from dyspepsia and receiving a low fat diet.

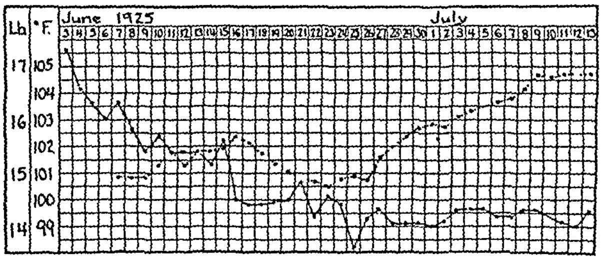
Some students of the disease distinguish several types, depending on whether the vitamin A deficiency has been the sole cause of the disease or whether other factors are also involved.

Bloch[8] identifies three types: (*a*) xerophthalmia with carbohydrate dystrophy; (*b*) xerophthalmia with carbohydrate atrophy, and (*c*) a group in which he realized that the symptoms were due to complete absence of fat substances which he termed dystrophia alipogenetica. He was then unacquainted with McCollum's work. The first two groups gave nutritional pictures corresponding to the "mehlnährschaden" of Czerny, and Bloch entertained the possibility of this being an avitaminosis in a class by itself.

Stransky[9] divided keratomalacia into two classes, one in which there is a definite avitaminosis caused by the entire absence of fat soluble A vitamin and which corresponds to experimental keratomalacia. He regards the term hypovitaminosis as more suitable for those cases in which the body's available supply has been disturbed by infection or by quantitative inanition.

In this country the universal availability of milk as a basis for infant feeding probably accounts for the rare incidence of the disease. It is interesting to note that in the years from 1890 to 1894, Kollock[10] of South Carolina observed numerous instances of the disease among the negroes. These observations formed the basis of several reports to the American Ophthalmological Society. Kollock noted that it was more common among the blacks than the mulattoes. He recognized that dietary factors played a part, noting that "the negro lived commonly on hominy (grits), rice, fish and bad hog meat," and thought that "the diet may have something to do with the condition." Kollock[11] reports that the disease is rarely observed at the present time.

Besides Kollock's observation, there have been isolated clinical reports in American medical literature by Weeks,[12] in 1887, Evans,[13] in 1898, and Little,[14] in 1882. More recently, Ross[6] reported four cases from the Children's Department of the Johns Hopkins Hospital, and DuBois and Wilson[15] reported one case from the Boston Infants' Hospital. All of these patients died from the disease.



Temperature and weight curve, showing period of three weeks' treatment before temperature (solid line) reached normal or weight (dotted line) increased.

REPORT OF CASE

The present report is one of keratomalacia following a diet therapeutically restricted, constituting virtually an experimental production of the disease.

A. J., an infant boy, had been breast fed until 10 months of age. Occasionally, besides breast milk, he received toast or buttered bread. Between the sixth and eighth months, during the past winter, he had had two bowel upsets, both occurring during a month's interval. These were cured by restricting his feedings.

The present illness began, May 12, 1925, with fever, restlessness, constipation and a slight cough. On the third day of the illness, he was reported as having had a "toxic dyspnea" and "looked as though he were going to die." This condition cleared up in thirty-six hours. After a few days his condition

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became worse again. He had no more dyspnea, but had very intractable constipation, which took castor oil and frequent flushings to modify. Besides the constipation, the only other symptom that impressed the parents was the infant's stupor.

The diet instituted on the first day of illness was oatmeal water and Mellin's Food in water. Both of these were given in small quantities about every hour or two. This constituted the entire diet regimen from May 12 to June 3, a period of twenty-two days, after which the baby was admitted to the Milwaukee Infants' Hospital.

On admission, the infant presented the semistuporous appearance of a typhoid or miliary tuberculosis, not the acutely ill facies of an intestinal intoxication. The eyes were held closed most of the time. The skin was doughy, the musculature flabby and the approximate weight loss since the onset of illness about 6 pounds (2.7 kg.). The mouth was dry and congested and the lips were cracked. No generalized adenopathy was found. The heart and lungs were apparently normal, the abdomen was distended and the visceral pattern very distinct. The throat was reddened. The ear drums were normal. The liver edge seemed very sharp and firm; the spleen was not felt. There was no rigidity of the extremities or of the neck. The reflexes were not abnormal. The fingers appeared slightly cyanosed. The temperature, on admission (4 p. m.), was 105.6. The provisional diagnoses were: (1) erythredema; (2) typhoid fever, and (3) miliary tuberculosis.

The urine showed a trace of albumin, and the microscopic examination was negative. Blood examination showed: 4,800,000 red blood cells; 85 per cent. hemoglobin (Tallqvist); 13,500 leukocytes; 78 per cent. polymorphonuclears, and 22 per cent. large lymphocytes. The Pirquet reaction was negative. Intracutaneous injection of tuberculin (0.01 mg.) was negative. The Widal test was negative. Spinal fluid examination revealed: no increased pressure; clear fluid; no cells; globulin negative and the sugar reduction diminished.

During the first twenty-four hours of his hospital stay the infant was given about 8 ounces (236 c.c.) of fat free lactic acid milk containing two-thirds ounce (20 c.c.) of Karo Corn Syrup. He seemed rather eager for this feeding but vomited a large part of it. Toward the end of the twenty-four hour period, he began to retain more of his food.

June 4, the temperature ranged from 101 to 104, and the baby was in a drowsy stupor. The legs were held in a froglike position, and the baby cried when they were touched or lifted. On the abdominal wall, to the left of the umbilicus, were several pin point petechial spots, probably the result of scratching. The possibility of scurvy suggested itself. The spots cleared up after a few days. Both eyes were dull in appearance, the sclerae yellow tinged, the right eye showing a corneal ulcer.

June 5, the child was in a stupor all the time, occasionally giving a sudden cerebral cry, accompanied by fixation of the eyes and rigidity of the upper extremities lasting only a few seconds—a miniature convulsion. The breathing was regular and quiet. There was a very slight suggestion of neck rigidity, and no rigidity of the extremities. The abdomen was distended. The cyanosis of the hands had disappeared. Spinal fluid examination was negative. The corneal ulcer was more distinct.

A diagnosis of keratomalacia being made, the food was changed to whole lactic acid milk, and 10 drops of cod liver oil three times daily was ordered. One ounce (30 c.c.) of orange juice was given twice daily.

Eye examination by Dr. Haessler revealed a large loss of substance in the cornea of the right eye, 4 mm. in diameter, involving one half of the depth of the cornea, with almost no marginal infiltration. Minimal hyperemia of the conjunctiva and no demonstrable ciliary hyperemia were discovered. The remainder of the cornea was clear, though the epithelial surface was slightly dull and distinctly less sensitive to mechanical stimuli than normal. The pupil did not dilate under homatropin, but the corneal defect would preclude ophthalmoscopic examination.

The corneal surface of the left eye was dull and less sensitive than normal and seemed slightly dry and stippled. A very faint nebula was seen in stroma by oblique illumination and was more evident by transmitted light. The fundus seen through a 5 mm. pupil (homatropin) was essentially normal. A slight haze of nerve head margin was ascribed to the effect of corneal imperfection. The diagnosis was trophic corneal lesion (xerophthalmia).

June 6, the patient was less drowsy, but kept his eyes closed and fretted while being examined. He cried out occasionally as though in pain. He took his feedings willingly. Though the tongue looked parched and dry, the mouth condition was slightly improved. The abdominal distention was less pronounced and the tissue turgor poor.

June 7, the child moved his hands to his mouth constantly, and seemed much fussier and more fretful when his legs were moved, the left one particularly distressing him. Examination of the right eye revealed the ulcer edge to be deeply infiltrated with heavy white margin, and the hyperemia markedly increased.

Cod liver oil, 1 c.c. hypodermically, was given daily.

June 8, the ulcer edge of the right eye was not greatly changed. As the center of the ulcer bulged moderately, a pressure bandage was applied.

Blood examination revealed: white blood cells, 11,500; polymorphonuclears, 64 per cent.; large lymphocytes, 30 per cent.; transitionals, 6 per cent. The urine was acid, with a trace of albumin; the microscopic examination was negative.

The next day there was not much change in the condition. The child fretted a great deal, and lay with his legs in a froglike position (infiltration of tissue due to hypodermic cod liver oil?). A roentgenogram of the extremities showed mild rickets. Examination of the right eye showed the ulcer edge heavily infiltrated with leukocytes. The child seemed much soothed when the eye was compressed.

The general condition was improved, June 10. The child was very fussy, but behaved in a more natural manner. The first weight gain was noticed, the present weight being 15 pounds, 3 ounces (6.8 kg.). The right eye was sunken; the left eye showed a normal luster with the corneal reflex normal.

June 13, the cod liver oil by hypodermic was omitted, and one-half teaspoonful, three times daily, ordered.

June 15, the child fussed a great deal when disturbed, but this might have been due to the great amount of induration that was present at the points of injection of the cod liver oil. He was quiet unless disturbed. The general condition was improved. Examination showed no rigidity of the neck or of the extremities. The liver edge felt much softer on palpation. The mouth was clean and moist; the cracks in the lips had healed.

Eight days later, when quartz lamp exposure was begun, the temperature dropped from 102.2 to 98.2, and for the rest of the hospital stay rarely exceeded 100.

The condition remained stationary for about ten days. The child took food very poorly and vomited feedings if they were urged. The bowels remained normal, with a slight tendency to constipation. The child fussed a great deal, particularly if disturbed.

June 26, with no changes in diet, the infant gained in weight. After this, he became much happier, took feedings eagerly, and convalescence progressed without further event, as shown in the accompanying chart.

COMMENT

This case presents a number of unusual features. The appearance of keratomalacia three weeks after the apparent deprivation of fat soluble A constitutes a startlingly rapid development of the disease. While in animal experimentation such rapid development frequently obtains, there one is dealing with a different life cycle. One might assume some comparative diet deficiency during the time preceding the actual onset of the symptoms, but in this case the infant was said to have been in perfect health prior to the onset of the illness.

The study of the clinical history reveals in this instance a rather unusual manifestation of nervous symptoms. The first impression, on examination of this patient, was the presence of disease of the nervous system. In the differential diagnosis, the following diseases were considered: erythredema, typhoid fever, tuberculous meningitis, scurvy and encephalitis. There was a very definite suggestion of cerebral irritation. In a study of the literature, this appearance of nervous symptoms has been not infrequently noted. As early as 1866, von Graefe,[16] who gave the first accurate description of the eye symptoms, mentioned, as general symptoms, pallor, diminished tonus, poor digestion and anorexia, but no striking cerebral symptoms. This was mentioned because of one case, particularly, in which the patient had convulsions and lethargy preceding death. Klebs [17] found an encephalitis on postmortem examination. Later observers discounted these early reports of encephalitis. Schulz [18] reported a case showing mild convulsions, the head in opisthotonos and marked rigidity of the neck. On postmortem examination, the brain was normal. Stephenson [19] noted opisthotonos in five out of thirty-one cases seen by him, but in one alone was there meningitis, as proved by postmortem examination. Bloch [8] describes the infants in his Type B classification as very fretful and sensitive to outside impressions. Stolte [20] not only observed hyperirritability, but noticed that some who recovered later had spasmophilia. Of Ross' [6] reported cases, opisthotonos and neck rigidity were noticed in Cases 3 and 4.

The outstanding symptoms of this patient were stupor, irritability on being disturbed, weight loss and other evidences of nutritional disturbance (pallor, doughy skin), dry inflamed mouth and cracked lips, fever, and the characteristic corneal ulceration. The liver seemed unusually large and firm when the child was first seen. The symptoms suggestive of meningeal disturbance persisted for a number of days. Besides the symptoms in the case report, it should be mentioned that transient strabismus was observed the day preceding hospital admission. Spinal fluid examination showed no pleocytosis nor increased globulin. There was slightly diminished sugar reduction. The child lay in the froglike position occasionally observed in scurvy. As the child had had intragluteal hypodermic medication, it was hard to rule this out as a factor in the position assumed.

The patient showed complete recovery, except for the loss of vision in the right eye. The response to the treatment with fat soluble A substance in this patient with keratomalacia was not nearly so striking as that often witnessed in scurvy following the use of orange juice. Despite the hypodermic administration of cod liver oil as suggested by Bloch, convalescence was slow. The absorption of cod liver oil thus given was very slow. It was three weeks after specific treatment was begun before the weight curve and the other symptoms showed appreciable change. It is very obvious that the appearance of the characteristic eye changes are ominous of more advanced nutritional disturbance than is apparent. Wolbach's [21] investigation leads one to believe that the changes undergone by the experimental subjects of this disease are more generalized than have heretofore been assumed. Wolbach found a considerable degree of atrophy in all of the epithelial tissues of the body, with ultimate keratinization of these tissues.

SUMMARY

1. The occurrence of keratomalacia in an infant following a diet restricted for therapeutic purposes constitutes an almost experimental production of the disease.
2. Besides the usual weight loss and nutritional upset, the infant presented pronounced meningeal symptoms.
3. The patient recovered following the administration of cod liver oil, given by mouth and hypodermically, and a diet of whole lactic acid milk.

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THE TREATMENT OF ERYTHREMIA WITH PHENYLHYDRAZIN *

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In a previous paper,[1] a case of polycythemia was reported which had been under treatment with phenylhydrazin hydrochlorid. Since the result in that case was so satisfactory, and since none of the other methods of treatment for this disease have been more than temporarily beneficial, it seems desirable to record the observations in four more cases treated with this drug in order that its actual value may be finally estimated. As I pointed out in the first paper, phenylhydrazin was used by Morowitz and Pratt to produce secondary anemia in animals, after which Eppinger suggested its use in the treatment of erythremia. Later, Taschenberg experimented with the drug in one patient. The results obtained in their cases were not successful, probably because the patients were in a late stage of the disease.

If phenylhydrazin proves of benefit in the treatment of the disease, it is important, because by the time patients with erythremia are compelled by their symptoms to ask a physician's advice, the problem is not so much one of diagnosis as of therapeusis. Previously, even with the combination of frequent bleedings and roentgen-ray or radium application, the certainty of being able to reduce the red cells and hemoglobin to somewhere within normal limits and to keep them there has been a difficult and sometimes impossible task.

The subsequent course of the case referred to (Case 3) can now be given, together with the results of treatment by phenylhydrazin of four other cases of erythremia.

The first two patients were treated by Dr. John L. Dorsey of Baltimore and, as far as I know, are the earliest ones to receive the drug in this country. He has kindly allowed me to include them in this report.

Case 1.—A woman, aged 60, who had a true polycythemia of some years' standing, seen, April 13, 1923, complained of increasingly severe headaches and pains in the fingers. She presented a typical picture of the disease with a large spleen. The red blood count was 10,112,000; the white cells, 5,000, and the hemoglobin, 120 per cent. (Dare). During April, 1923, she was given four radium treatments with no apparent benefit and no change in the blood count. May 22, 1923, she began a course of phenylhydrazin in 0.1 gm. doses daily for twenty days. This was given in capsules by mouth.

Table 1 shows the dosage and the variations in the blood counts during treatment in this patient.

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* From the Department of Medicine, Johns Hopkins Hospital.

[1] Owen, Trevor: A Case of Polycythaemia Vera with Special Reference to the Familial Features and Treatment with Phenylhydrazine, Bull. Johns Hopkins Hosp. **35**: 258-262 (Aug.) 1924.

Table 1.—*Dosage and Variations in Blood Counts During Treatment in Case 1*

Date	Doses of Phenylhydrazin	Hemoglobin	Red Blood Cells	White Blood Cells	Polymorphonuclears, per Cent.	Comment
1923						
4/13	Irradiation 4 times in April, 1923	120	10,112,000	5,000	81	
4/27	....	120	8,448,000	4 800	..	
5/11	....	120	9,520,000	6,200	71	
5/22	0.1 gm. each day for 20 days ending June 10					
5/25	....	120	9,200,000	4,000	80	
6/ 1	....	120	7,760,000	2,600	..	
6/11	....	120	7,600,000	......	..	
6/19	....	115	7,456,000	......	..	
6/20	0.1 gm.					
6/21	0.1 gm.					
6/22	0.1 gm.					
6/23	0.1 gm.					
6/24	0.1 gm.					
6/25	0.1 gm.	105	5,808,000	5,600	72	
7/ 3	....	80	5,120,000	5,200	68	Platelets increased
7/10	....	85	4,384,000	7,000	82	
7/18	....	75	3,004,000	5,200	..	
8/ 3	....	95	4,040,000	3,200	..	
8/27	....	105	4,922,000	5,600	79	
10/ 6	....	110	5,712,000	4,800	77	
10/ 8	0.1 gm.					
10/ 9	0.1 gm.					
10/10	0.1 gm.					
10/11	0.1 gm.					
10/12	0.1 gm.					
10/25	....	105	5,104,000	3,400	..	
11/28	....	95	4,256,000	4,800	..	
12/21	....	96	4,701,000	6,400	..	
1924						
2/14	0.1 gm. daily for 5 doses	120	6,528,000	10,000	77	
3/ 5	0.1 gm. daily for 5 doses	112	6,336,000	5,200	86	
3/18	0.1 gm. daily for 5 doses	110	5,840,000	4,200	84	
3/24	0.1 gm. daily for 5 doses	105	5,534,000	7,000	..	
4/ 2	....	95	4,176,000	9,200	88	Occasional myelocyte
5/ 3	....	98	4,616,000	5,400	..	
5/ 9	0.1 gm. daily for 5 doses					
6/17	0.1 gm. daily for 5 doses	118	6,064,000	8,400	..	
6/30	....	100	4,320,000	5,800	81	
7/15	0.1 gm. daily for 5 doses					
7/23	....	93	4,112,000	8,200	..	
8/15	0.1 gm. daily for 5 doses					
8/22	0.1 gm. daily for 5 doses					
9/ 4	....	90	4,400,000	6,000	..	
9/18	0.1 gm. daily for 5 doses					
10/ 3	0.1 gm.					
10/ 4	0.1 gm.					
10/ 5	0.1 gm.					
10/ 6	0.1 gm.	105	4,688,000	6,000	83	
10/ 7	0.1 gm.					
11/15	0.1 gm. daily for 5 doses					
12/ 1	0.1 gm. daily for 5 doses	120	5,248,000	3,800	..	
12/22	0.1 gm. daily for 5 doses	110	5,904,000	7,800	..	
1925						
1/ 5	0.1 gm. daily for 5 doses	110	5,184,000	4,600	..	
2/ 1	0.1 gm. daily for 10 doses					
2/22	....	90	5,680,000	......	..	
3/ 1	0.1 gm. daily for 5 doses					
4/11	0.1 gm. daily for 5 doses	105	5,696,000	4,800	..	
4/30	0.1 gm. daily for 5 doses	105	5,088,000	3,800	..	
5/17	0.1 gm. daily for 5 doses					
6/ 9	0.1 gm. daily for 5 doses	108	4,960,000	5,000	..	

The facts to be particularly noted in the table are that the polymorphonuclear percentage was usually high; a mild secondary anemia occurred once, and there was always an exacerbation of the symptoms whenever the blood count rose.

It will be seen that 2.6 gm. was originally required to bring the blood down to normal, the count gradually falling for three weeks after the drug had been stopped. Three months elapsed before a resumption of treatment was necessary, after which the drug was given as indicated. In these twenty-five months, a total of 14.1 gm. of phenylhydrazin has been used, which is approximately 0.13 gm. a week. There have been no unpleasant symptoms from the drug, and now the patient is in good health.

Case 2.—A widow, aged 60, who had consulted Dr. Dorsey, Dec. 5, 1923, because of pain in the chest, had had bad health for several years. Her husband died in 1903 of cirrhosis of the liver, and she had a nervous breakdown following this trouble. During this time, there was some numbness in the arms. Gradually, she had become more and more easily fatigued. She had an old sinus infection which was kept under observation. There was an appendectomy in 1917. In 1919, some neck ligaments were torn in a motor accident, and she was in bed for several weeks. She suffered from frequent headaches, which were relieved by codein. Several abscessed teeth were removed during the last few years. There was no history of hemorrhages. The family history was negative.

For a few weeks she had been having a sharp pain over the precordium. This did not radiate and was not related to exercise. It frequently woke her up at night with a feeling of oppression. Very frequently she would have a tense aching pain in the fingers.

The patient was a well nourished woman. Her face was slightly red, and the lips, hands and feet were definitely cyanotic. The fundi were normal; the veins not overfull. Around the margin of both disks, there were several areas resembling old hemorrhages or choroidal degeneration. The pharyngeal and buccal mucous membrane was fiery red. A good many dilated veins were present over the sternum. The lungs were clear. The heart was slightly enlarged, the left border being 14 cm. to the left of the median line, and the right border 4 cm. There was definite retromanubrial dulness. The heart sounds were normal except for a gallop rhythm. No murmurs were heard. The radial and brachial arteries were moderately thickened, and the systolic blood pressure was 170; diastolic, 125. The abdomen appeared normal, but the spleen was enlarged and reached to within 6 cm. of the umbilicus. The liver just reached the costal margin. There was edema of the feet. The reflexes everywhere were normal.

The urine varied in specific gravity from 1.010 to 1.020; a trace of albumin and an occasional hyaline cast was present. The phenolsulphonephthalein excretion was 59 per cent. in two hours. The blood examination showed: 8,342,000 red cells; 10,840 white cells, and 122 per cent. hemoglobin (Sahli). There was slight anisocytosis. In the differential count, there were 73.2 per cent. polymorphonuclears and 26.4 per cent. lymphocytes. The platelets were increased. The blood nonprotein nitrogen was 34.2 mg. per hundred cubic centimeters; sugar, 10 mg. per hundred cubic centimeters; uric acid, 3.49 mg. per hundred cubic centimeters; creatinin, 3.0 mg. per hundred cubic centimeters. The Wassermann reaction was negative. The stools were normal. Roentgen-ray examination of the chest showed a moderate enlargement of the heart, a dilated aorta, and a generalized nontuberculous infiltration of both lungs. The diagnosis was erythremia, arteriosclerosis and hypertension.

Table 2 shows the course of this case under treatment. It was carried out while the patient was up and about.

The noteworthy facts shown in Table 2 are: There was always a high polymorphonuclear percentage; a relatively slight leukocytosis occurred; the blood pressure fell to a normal level, and the liver became slightly larger.

In summary, this patient required a total of 12.4 gm. of phenylhydrazin in the seventy-seven weeks, an average of about 0.16 gm. a week, to keep the blood normal. A slight secondary anemia was produced on two occasions, but otherwise the course was uneventful.

Case 3.—A man, aged 46, who had had erythremia probably for ten years, developed neurologic symptoms only five months before coming under observation in December, 1923. Immediately before treatment was begun, the blood examination showed: hemoglobin, 145 per cent.; red blood cells, 7,612,000; leukocytes, 8,000. In the course of three weeks the patient was given 2.4 gm. of phenylhydrazin, with the result that his blood count became normal and he felt well. After discharge from the hospital, there was an exacerbation of his symptoms and another rise in the blood count. This was again easily reduced to normal after another course of the drug in May and June, 1924, during which time he received a total of 1 gm. Since then, a matter of twelve months, he has been followed very carefully and has remained perfectly well. Complete blood counts were made every two weeks for the first few months. As the hemoglobin at the end of this time was 105 per cent. and the red cells 5,500,000, 0.1 gm. doses were given twice in the last two weeks of July, once a week in August, and three times in September. Since then, he has taken 0.1 gm. once a week. On this small but regular dosage, the blood count remained normal until the end of 1924, when a gradual rise was noted. In December, 1924, the hemoglobin was 108; red cells 5,640,000, and the leukocytes 10,800. During January, February and March the counts were reduced slightly. During April, no phenylhydrazin was taken, but in May he took 0.1 gm. every five days and in spite of this, at the end of the month, the red cells were found to be 8,900,000, and the hemoglobin, 115. In June, he took 0.1 gm. every other day with little effect, and by June 19 the hemoglobin was unchanged and the red cells were 7,100,000. A fresh supply of phenylhydrazin was obtained, and he was given 0.1 gm. every day for ten days. This has resulted in complete recovery again, and at the present time of writing (July 29, 1925), the hemoglobin is 100, the red cells 4,360,000 and the white cells 10,000. Though this increase in blood count was accompanied by a return of some of the symptoms, the patient has not had to stop work at any time and has felt perfectly comfortable since beginning treatment.

TABLE 2.—*Dosage and Variations in Blood Counts[*] During Treatment in Case 2*

Date	Doses of Phenylhydrazin	Hemoglobin	Red Blood Cells	White Blood Cells	Polymorphonuclears, per Cent.	Comment
1923						
12/ 5	....	...	7,968,000	7,200	..	Blood pressure 170/125
12/ 6	....	120	9,568,000	6,000	80	
12/13	0.1 gm. each day for 20 days ending Jan. 1, 1924					
12/19	....	120	7,648,000	7,600	..	
12/24	....	120	6,781,000	6,600	83	
12/29	....	115	6,190,000	......	..	
1924						
1/ 2	....	108	5,648,000	13,800	89	
1/ 7	....	90	7,200,000	13,700	85	
1/29	....	90	5,500,000	10,800	76	Some headache; not so easily tired; down South
2/26	....	...	5,600,000	9,900	75	
3/10	0.1 gm.					
3/11	0.1 gm.					
3/12	0.1 gm.					
3/13	0.1 gm.					
3/14	0.1 gm.					
3/25	....	...	....	......	..	Precordial pain; two attacks
4/ 1	....	85	6,200,000	9,300	80	
4/10	0.1 gm. daily for 5 doses					
4/18	0.1 gm. daily for 5 doses	120	5,312,000	20,000	85	Still tires easily; aching fingers; "ringing" in head; dizziness; returned from the South
4/22	....	...	....	......	..	Blood pressure 120/70; two nosebleeds; one attack of precordial pain; no cyanosis
4/29	....	95	4,544,000	9,000	..	
5/14	0.1 gm. daily for 5 doses	105	4,900,000	4,800	..	No pain; no epistaxes; less tired
5/28	....	100	4,600,000	7,600	80	Severe headaches; one nosebleed
6/11	0.1 gm. daily for 5 doses	95	5,760,000	9,800	..	
6/24	....	93	4,040,000	5,600	..	
7/ 8	....	98	4,480,000	7,400	83	
7/22	....	90	4,800,000	4,200	..	Temporary diarrhea; spleen, 3 F. B. below costal margin
8/ 1	0.1 gm. daily for 5 doses					
9/ 2	....	96	5,250,000	12,000	..	
9/ 9	0.1 gm. daily for 5 doses	...	....	......	..	Stronger; a few headaches
10/ 9	0.1 gm. daily for 5 doses	108	5,680,000	8,600	..	Blood pressure 138/95; much better
10/20	0.1 gm. daily for 5 doses	103	5,360,000	8,400	90	
10/27	....	100	4,624,000	7,400	81	Numbness and tingling of toes after walking
11/10	0.1 gm. daily for 8 doses					
11/26	....	78	3,300,000	7,500	93	Numbness of feet; morning headaches
12/ 4	....	70	3,760,000	7,200	..	
12/16	....	90	4,330,000	6,800	85	Feels better
1925						
1/ 5	....	100	4,736,000	5,400	..	Went South
1/15	0.1 gm. daily for 5 doses					
2/ 9	....	104	7,640,000	8,400	83	Felt badly for a week; headaches severe; becoming red
2/11	0.4 gm.					
2/12	0.4 gm.	...	6,700,000			
2/13	0.2 gm.					
2/14	0.2 gm.					
2/15	0.1 gm.					
2/16	0.1 gm.					
2/17	0.1 gm.	100	6,240,000	16,400	84	
2/18	0.1 gm.					
2/20	....	88	4,768,000	......	..	Bronchitis; palpitation; dizziness
2/25	....	96	4,808,000	13,375	84	
3/10	....	90	5,574,000	13,000	86	
3/13	0.1 gm. daily for 5 doses					
3/25	....	94	5,700,000	13,000	86	
3/26	0.1 gm. daily for 5 doses					
4/10	0.1 gm. daily for 5 doses					
4/16	....	95	....	7,800	..	Returned from the South; spleen, 4 F. B. below costal margin; liver, 2 F. B.; no cyanosis; blood pressure, 130/80
4/25	0.1 gm. daily for 5 doses					
5/ 5	....	95	4,480,000	9,000	..	
5/10	0.1 gm. daily for 5 doses					
5/19	....	81	4,170,000	7,800	..	
5/25	0.1 gm. daily for 5 doses					
6/ 6	....	80	3,200,000	8,800	..	

When these patients are studied by daily counts during the administration of the drug, interesting and important changes take place. The next two patients, who were in the Johns Hopkins Hospital for treatment, illustrate this point.

CASE 4.—S. M., a Russian laborer, aged 62, was admitted Oct. 14, 1924, presenting all the features of a severe grade of polycythemia. His complaints were redness of the hands, headache, weakness and a sensation of internal heat. He was a brilliant purplish red, with dilated veins over the head, neck and arms and to a lesser extent in the legs. He had a large colloid goiter, considerable emphysema, a slightly enlarged heart, moderate thickening of the arteries, and a blood pressure of 160 systolic and 100 diastolic. The liver and spleen were just palpable. There was slight dyspnea and some sweating of the hands and feet. The blood showed 10,000,000 red cells, 8,000 leukocytes and 123 per cent. hemoglobin.

Chart 1 shows the effect of the treatment. This was started, October 31, with daily doses of 0.2 gm. of phenylhydrazin. After twelve days this was discontinued, and urobilinuria, an increased leukocytosis, and a gradual fall in red count and hemoglobin took place. However, this proved to be only of temporary duration, and after a rise in counts another course of the same daily dosage was begun. In three or four days, the hemoglobin and red cells showed a rapid fall. The urobilin became greater, the spleen increased in size and on one day there was pain and a friction rub over it. The drug was not stopped altogether, but the dose was cut down to 0.1 gm. a day for three days, and then discontinued. In this second course, 1.9 gm. had been given. For two weeks, the count kept on falling and reached 5,300,000 red cells and 88 per cent. hemoglobin. During this process, the patient's color became normal, the dyspnea disappeared, and he felt better than he had for many years. He was discharged two months after entry, the blood count then showing 6,000,000 erythrocytes and a hemoglobin of 90 per cent. The blood pressure had fallen to 140 systolic and 74 diastolic.

Supervision of this case could not be carried out as carefully as one would have liked because the patient lived out of the city. At the first, inadequate amounts were given, and in seven weeks with 0.2 gm. a week, the hemoglobin rose to 120 per cent., the red cells to 7,744,000, and the leukocytes to 20,000. During the next two weeks, 1.6 gm. was given with a most satisfactory result. The hemoglobin fell to 88 per cent., the red cells to 6,760,000 and the white cells to 7,000. From that date and for a period of nine weeks, a total of 2 gm. of phenylhydrazin was taken. At the end of that time, May 1, 1925, the hemoglobin was 106 per cent., the red cells 5,724,000 and the white cells 20,000.

In summary, 4.3 gm. of phenylhydrazin was required originally to reduce the blood count to normal. Five weeks after this course was completed, treatment was started again and for seventeen weeks an average weekly dose of approximately 0.3 gm. was necessary to keep the blood count about normal.

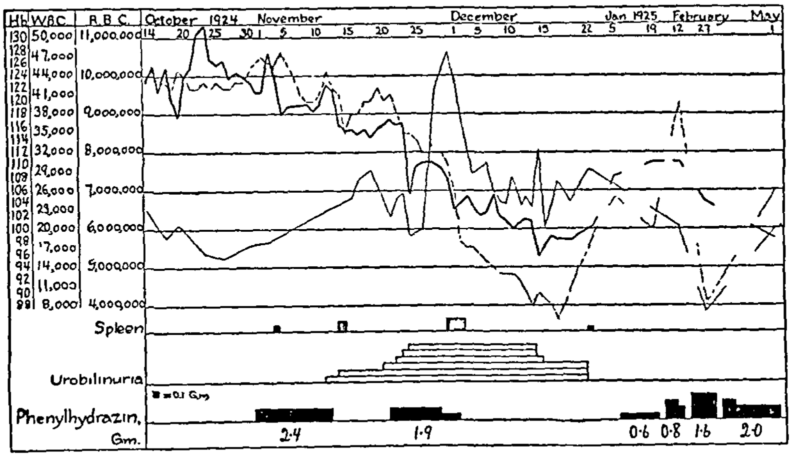

Chart 1 (Case 4).—Effect of doses of phenylhydrazin on blood count: heavy line, *red blood corpuscles; light line, white blood corpuscles; broken line, hemoglobin.*

Case 5.—A man, aged 56, admitted to the Johns Hopkins Hospital, March 19, 1925, had had symptoms for four or five years and complained of attacks of pain in various parts of the body. He was the picture of a polycythemia of a moderate grade. The hemoglobin was 114 per cent.; the red cells 9,224,000 and white cells 18,200; polymorphonuclear cells, 80 per cent. The liver was just palpable, and the firm spleen was three fingerbreadths below the costal margin. The systolic blood pressure was 167; diastolic, 110. He weighed 157 pounds (71.2 kg.). Chart 2 shows the course of Case 5 under treatment. As in Case 4, beginning March 22, 0.2 gm. of phenylhydrazin was given daily for fifteen days, a total of 3 gm. A week after this was started, the hemoglobin and red cells were decreasing rapidly, and the leukocytes were rising. The leukocytosis is important and will be discussed below. After the drug was stopped, a further increase in the leukocytes took place, reaching 59,800 nine days later. As will be seen, a moderate secondary anemia was produced just after this point, the hemoglobin going to 45 per cent., and the red cells to 2,800,000. During this process, jaundice developed, the spleen became smaller, and there was a slight urobilinuria. There was also fever of from 99 to 100, which twice reached 101. The patient felt very weak and lost his appetite completely. There was a persistent cough, and it was thought that he had a bronchitis. Soon after the leukocytosis began to subside, the red cells and the hemoglobin commenced to rise. This did not occur until two weeks after the last dose of phenylhydrazin. On discharge, seven weeks after the first dose, the hemoglobin was 68 per cent., the red cells 4,144,000, and the leukocytes 16,800. The systolic blood pressure was 136; diastolic, 80. The patient was feeling much stronger, was free of pain and had a good appetite. A week later, May 18, the hemoglobin was 80 per cent., the red cells 4,800,000, and the leukocytes 22,000. He was told to have blood counts made every two or three weeks, and as soon as the hemoglobin reached 100, he was to begin taking 0.3 gm. of phenylhydrazin a week, but he was to stop if the leukocytes rose or the hemoglobin fell below 90.

COMMENT

Clinical Course.—An examination of the charts will make it clear that the use of this drug presents two problems. One of these has to do with the rapidity with which the drug can be given, and the other with the duration of its administration. Excessive doses will cause secondary anemia, which, even though temporary, may be sufficiently severe to be alarming. As the drug is not excreted very rapidly, the effect is cumulative. In Cases 1, 2, 3 and 5, the red cell destruction continued for over two weeks after the drug was stopped, while on the other hand, in Case 4 (Chart 1), the first 2.4 gm. was not sufficient to be effective.

In the repeated studies that were made in Cases 4 and 5 shown in Charts 1 and 2, the first effect of the drug which could be observed was an increase in the leukocytes. This occurred before any changes were noticed in the number of red blood cells or in the percentage of hemoglobin. Referring to Chart 1, it can be seen that, on admission, the leukocytes were 23,000, while at rest in bed during the next twelve days, the leukocytes fell to 15,500, the red cells at the same time increasing to 11,300,000. Phenylhydrazin was then begun, and during the first course of the drug the leukocytes rose gradually from 17,200 to 30,000. Soon after this increase in the white blood cells had begun, the hemoglobin and red cells were noticed to fall, and urobilin appeared in the urine. After the drug was stopped, the counts tended to revert to their previous levels. When a second course of phenylhydrazin was begun after an interval of only nine days, there was an abrupt rise in the white count from 19,000 to 47,500. When the dose was reduced, the leukocytes fell again to about 30,000 and the red cells increased.

In Case 5 (Chart 2), twelve days after the first dose, there was a leukocytosis of 24,000, and nine days after the last dose this had increased to 59,000 and a marked decrease in the red cells and hemoglobin followed. It was observed that, in the two cases when daily counts were made, this rise in the leukocytes always preceded the fall in the red cells and hemoglobin, and that the greatest leukocytosis came before the greatest drop in the hemoglobin and red cells. This is also seen most strikingly in Chart 2 of Case 5. With this increase in the leukocytes and the rapid fall of the hemoglobin and red cells, there was a moderate icterus with a slight urobilinuria in Case 5, and a marked urobilinuria with jaundice in Case 4. It was also noticed that, although the leukocytes fell to a lower level after the drug was discontinued, they did not reach normal figures until the red cells and hemoglobin had begun to rise again. In Cases 1 and 2, a leukopenia was found with smaller doses, but when larger amounts were given a leukocytosis occurred. These observations seem to point clearly to the fact that on the administration of phenylhydrazin, a leukocytosis preceded the fall in hemoglobin and red blood cells, and that the reduction of hemoglobin and red blood cells which follows is roughly proportional to the leukocytosis. It is necessary, therefore, to follow the changes in the leukocyte counts when the drug is being given, for an increase in the white cells is an indication for stopping the drug.

The question of the possible causes of the leukocytosis is an interesting one. One might conceive of the leukocytosis as being due to a direct effect of the drug on the bone marrow, or hematopoietic tissue, but such an explanation seems unlikely, in spite of the fact that the bone marrow is hyperplastic in animals poisoned with the drug. A more likely explanation of the leukocytosis might be that it is a compensatory mechanism due to injury which phenylhydrazin causes to the cells of the liver, and certainly to the erythrocytes. With phenylhydrazin administration, a destruction of red blood cells is evidenced by a decrease in their numbers and by urobilinuria, and when large doses are employed, these are so greatly increased with jaundice accompanying them that one suspects liver cell destruction as well. A similar destruction of tissue and especially of the liver may account for the leukocytosis seen in certain cases of acute poisoning with such substances as mercuric chlorid, lead, arsenic and *Amanita phalloides,* and in some cases of acute yellow atrophy. These substances also injure tissue cells, and the leukocytosis may indicate a certain degree of actual necrosis.

In animal experiments with the hydrazin compounds, extensive damage to the liver is known to occur. Wells,[2] studying the organs of dogs, cats and guinea-pigs to which he had given toxic doses of hydrazin, and Underhill and Kleiner,[3] in similar experiments, found very constant changes. The liver alone was usually affected. It was friable and very yellow. In every case, there was fatty degeneration of the cytoplasm of the parenchymatous cells beginning at the center of the lobule and progressing outward. He saw no focal necroses. The statement is also made that the hydrazin had apparently no effect on the red cells because no abnormal pigmentation of the liver cells, spleen or lymph glands was present. Later, Underhill[4] gave dogs large doses of the various hydrazin compounds. No details are recorded, but the following effects were noted: In a 10 kg. dog given a dose of 500 mg. of phenylhydrazin, the liver was of a peculiar chocolate color and the spleen enormously enlarged and dark purple.

Methylphenylhydrazin had no effect on rabbits, and in a dog weighing 4 kg., which received 200 mg., the organs were uninjured. The same was true of diphenylhydrazin and semicarbazid. Bodansky[5] made a study of the same kind, estimating the amount of liver damage by sugar tolerance tests. His observations are in agreement with the previous ones, but examinations of the organs are given in more detail. Unlike Wells, he did find areas of necrosis in the liver. The importance of these experiments lies in the fact that some of the derivatives of hydrazin are less destructive to liver cells than others, though they are equally effective in destroying red blood cells. With the free base, a dog weighing 10.4 kg. died, after 0.294 gm., with fatty degeneration of the liver and areas of necrosis. Hydrazin sulphate was slightly more toxic. With phenylhydrazin, 120 mg. given to a dog weighing 5.9 kg. produced deficient liver function. There was marked anemia. At necropsy there was liver cell damage with marked hyperplasia of the spleen and bone marrow. A little fatty degeneration was found in the kidneys. Methylphenylhydrazin was less harmful both to blood and to liver. Diphenylhydrazin had no effect. Acetylphenylhydrazin, on the other hand, possessed the power of reducing the number of red blood cells, though not quite to the same degree as phenylhydrazin, but did no damage to the liver. The dog was given two injections (0.71 gm.) and became very anemic, but the liver efficiency was not lowered and the organ was normal at necropsy.

It seems, therefore, from these and similar observations that we may find other derivatives of the hydrazin series which will be more suitable to use for therapeutic purposes than phenylhydrâzin. Acetylphenylhydrazin, for instance, seems preferable because in animals it is less toxic to liver substance, while retaining the power of destroying red blood cells.

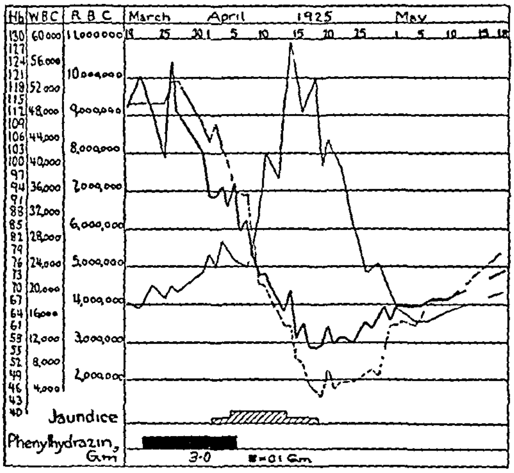

Chart 2 (Case 5).—Effect of doses of phenylhydrazin on blood count.

Whether repeated small doses of phenylhydrazin, such as were given to patients, will or will not be deleterious to the liver cannot be said yet. It is conceivable that a cirrhosis may ensue, but whether this will be any greater than that which ordinarily occurs needs further study. Levi,[6] from the study of his case which came to necropsy, decided that there is danger in the use of the drug because liver cirrhosis may be produced. He is not quite sure whether this is due to the action of phenylhydrazin directly, or occurs secondarily from the increased blood destruction. His patient was a man of 50, of nonalcoholic history, who received 7.5 gm. of phenylhydrazin during a year and a half. This was given in 0.2 gm. gelatin capsules once a day in five courses, three of 1.5 gm. each, one of 2 gm. and one of 1 gm. Each course was begun when the hemoglobin reached 110. There was jaundice and urobilinuria during these courses of the drug. The patient died of an intercurrent infection (erysipelas). The necropsy findings showed a much enlarged spleen, rich in leukocytes and with extensive deposits of blood pigment. The liver was of medium size, the surface slightly irregular, and on section was of a peculiar yellowish color. Microscopically, the interlobular connective tissue was greatly increased and infiltrated, with round cells. There were many centers of regeneration. The bone marrow was very hyperplastic, the myelocytes obliterating the normoblasts. He discussed at length the probabilities of the various factors that may cause the cirrhosis. The fact that there are cases of polycythemia with and without cirrhosis argues against the cirrhosis as a primary lesion, and he thinks that most likely the blood destruction injures the liver and that the natural course of events is only exaggerated by the artificial blood destruction produced by phenylhydrazin. He concludes by making the very fair statement that, whether the patient is left to deal with his plethora as best he can, or whether phenylhydrazin is added to assist his own resources with the chance that cirrhosis follow, is a question for each particular patient and his physician to decide. However, the latter risk is unknown and may be relatively small as compared to the risks that we know are run without treatment. Moreover, since the majority of untreated patients with polycythemia develop cirrhosis, if they escape other complications, it seems logical to conclude that their own inadequate method of blood destruction is not necessarily successful.

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[2] Wells, H. G.: The Pathological Anatomy of Hydrazine Poisoning, J. Exper. Med. **10**: 457-464, 1908.

[3] Underhill, F. P., and Kleiner, I. S.: The Influence of Hydrazine upon Intermediary Metabolism in the Dog, J. Biol. Chem. **4**: 165-178, 1908.

[4] Underhill, F. P.: Studies in Carbohydrate Metabolism, J. Biol. Chem. **17**: 295-298, 1914.

[5] Bodansky, M.: The Action of Hydrazine and Some of Its Derivatives in Producing Liver Injury as Measured by the Effect on Levulose Tolerance, J. Biol. Chem. **58**: 799-811 (Jan.) 1924.

[6] Levi, Ernst: Ztschr. f. klin. Med. **100**: 777-784, 1924.

From these considerations and from the observations on the behavior of the leukocytes in the patients treated with phenylhydrazin, as well as in patients suffering from the toxic effects of other poisons, it is felt that the occurrence of leukocytosis in these conditions probably indicates actual destruction of tissue cells. With phenylhydrazin, in particular, the liver cells may be destroyed as well as the red blood cells.

Method of Treatment.—From these studies, it has been possible to devise a tentative plan for the treatment of patients suffering with erythremia. It is obviously most important to control the treatment by careful and frequent blood counts with especial reference to the changes in the leukocytes. This is absolutely essential when large doses of phenylhydrazin hydrochlorid are being administered.

It is safe to begin treatment by giving 0.2 gm. of phenylhydrazin a day for three or four days, and then 0.1 gm. every day until the leukocytes increase in number or the hemoglobin falls below 100 per cent. When the leukocytes rise or the hemoglobin falls, which may occur in two, three or four weeks' time, 0.1 gm. may be given every second or third day, or the drug may be stopped altogether. When the rise in leukocytes is marked, it is safest to discontinue the drug entirely. So long as the leukocytes remain high, even though this persists two weeks or more, the drug should be withheld, in spite of the fact that the red cells and hemoglobin may not fall. It is unlikely that this will happen. If the hemoglobin and red cells begin to rise or the leukocytes begin to fall, the dose should be started again or increased in frequency. Gradually the interval between doses can be lengthened, and usually 0.1 gm. once a week will suffice to keep the blood count within normal limits.

Symptoms Under Treatment.—So far, no ill effects have been noticed in these patients. Two of the patients complained of slightly disagreeable sensations after taking the capsules. In one, there was a sense of flushing and for some days slight fever. The other patient complained of a mild oppressive sensation in the neck. In two of the cases, there was slight hematuria during the administration of the drug; but as this is not an uncommon symptom of the disease and since it ceased in both patients while they were still taking the drug, it is not clear that the phenylhydrazin was the actual cause of the hematuria. Two of the patients had acute bronchitis during the treatment.

In two of the patients, the spleen increased in size at the height of the blood destruction (Cases 3 and 4) while in another (Case 5), there was a diminution in the size of the spleen. In the latter case, the liver seemed to enlarge as the spleen diminished in size. A most satisfactory result has been the reduction of the hypertension which was present in three of the patients. In Case 2, the blood pressure fell from 170/125 to 130/80; in Case 4, from 160/100 to 140/74; and in Case 5, from 167/110 to 136/80.

Changes in the Urine.—Evidently, the phenylhydrazin in some form is excreted in the urine. Soon after the drug is started, the urine, when allowed to stand, turns very dark, almost black. We do not know in what form it is eliminated. The phenolsulphonephthalein excretion in two of the patients was estimated before and during treatment, but no increase was found during the administration of the drug. Levi [6] found hematoporphyrinuria on one occasion in his case.

CONCLUSIONS

1. Phenylhydrazin hydrochlorid acted beneficially in five cases of erythremia. This was evidenced by the uniform decrease of the hemoglobin and red blood cells, a great improvement in all the symptoms and a reduction in the blood pressure of three patients with hypertension.
2. One of the early effects of the drug is a leukocytosis, noted in two cases.
3. The occurrence of a leukocytosis is a highly important index in controlling the treatment.
4. The possibility of danger, because of the toxic action of the drug on the liver, may perhaps be overcome by substituting another of the hydrazin compounds.

Orthostatic Albuminuria.—The connection between orthostatic albuminuria and a past attack of scarlatinal nephritis has been previously suggested. Bass, in 1912, gave an abstract of three papers dealing with the subject. Weiss-Eder allowed forty children with scarlet fever to kneel in a position of lordosis, with the result that twenty-three developed an albuminuria. The writer concludes that children convalescent from scarlet fever are not more disposed to nephritis than other children, and that such children, having nephritis, often show an orthostatic albuminuria, "which may be due to weak muscles." Nothman found that in twelve out of thirteen cases of scarlet fever in which at an earlier date the lordotic experiment was positive, albumin appeared later in the urine, but that in those in which lordosis did not cause albuminuria, albumin never appeared spontaneously later on. He concludes that, just as nephritis may terminate in orthostatic albuminuria, so conversely an orthostatic albuminuria may be the first sign of nephritis. Schick says that orthostatic albuminuria following scarlet fever has a good prognosis, and refers to Jehle, who examined seventeen children in various stages of scarlet fever.—Russell, J. W.: *Lancet*, Oct. 3, 1925.

Clinical Notes, Suggestions and New Instruments

A CASE OF TULAREMIA

W. L. Brown, M.D., and C. P. Brown, M.D., El Paso, Texas

A. L., a man, aged 58, a locomotive engineer, while oiling his engine preparatory to leaving El Paso at 8 p. m., Aug. 17, 1925, was bitten by an insect just above the prominence of the left cheek, three-fourths inch below and to the left of the eye. He noticed that it was an unusual bite, and thought it must have been made by a very large mosquito.

He made his run and by midnight began to have swelling in the region of the bite and pain in the glands on the corresponding side of his neck. He slept the following day. When he got up at 5 p. m., the glands were much swollen and were very tender and painful; there was considerable swelling at the site of the injury. He had no appetite and thinks he had fever at that time.

He brought his train back to El Paso that night, but the following morning he ached all over as if he had grip, was chilly, had fever, and the glands were painful. He took a cathartic, put cataplasma kaolini on the site of the injury and went to bed for his day's sleep. He awakened, sweating and chilling, during the day.

We saw him at our office on the fourth day, at which time he looked as if he had been sick a month. He was still feeling very bad and had a temperature of 102; the glands were sore, and he was having drenching sweats when he slept and all the symptoms of an acute infection. At the site of the injury there was a hard papular area one-fourth inch in diameter; it was raised, and the apex indicated that it was suppurating. On removal of the skin covering this area, it showed evidence of a necrotic core. This core did not loosen and fall out until the eighth day, when it came away leaving a cavity so clear cut that it looked as if it had been punched out. The walls of this cavity were considerably above the surface of the skin, and the surrounding area was still very hard. There was no involvement of the eye. There seemed to be no question from the beginning that the insect bite was the cause of the illness. On the third day of our care we suspected tularemia, as the clinical picture was typical.

August 29, a blood examination showed white cells, 11,500, with 75 per cent. polymorphonuclears. Typhoid, paratyphoid A, and paratyphoid B agglutinations were negative. The urine was normal. September 1, two guinea-pigs were inoculated subcutaneously, one from a swab, and the other from scrapings of the ulcer. Both pigs died, September 5, within a few hours of each other, and the postmortem examinations showed typical lesions in the spleen and the liver, as described by Francis.[1]

The liver and the spleen from these dead animals were mixed with food and given to two other guinea-pigs which were confined in the cage in which the former had died. After a week of living in this cage and eating this food, they developed no symptoms.

September 12, agglutination for tularemia was positive in a dilution of 1:320. October 2, a suppurating cervical gland was opened, and two guinea-pigs were inoculated with this pus—from which, unfortunately, no cultures or smears were made—and twenty days later they showed no signs of ill health. On the nineteenth day following the inoculation, one of the pigs gave birth to a normal baby. This experiment would suggest that the pus did not contain *Bacterium tularense*. October 3, agglutination tests were positive in a dilution of 1:2,560, as reported by the U. S. Public Health Service.

The diagnosis in this case was made clinically on account of the history of an insect bite; enlargement and pain in the glands in the drainage area within twelve hours, with all the symptoms of a serious, acute, septic condition within forty-eight hours, especially characterized by chills and drenching sweats, and rapid loss of weight. Our patient lost 16 pounds (7.3 kg.) within eight days. Also, the local lesion was entirely characteristic, a hard papule one-fourth inch at the base, much elevated, and with extreme induration, the core falling out on the eighth or tenth day, leaving a clear cut, punched out hole.

The suspension of dead bacteria for the agglutination tests was secured from the U. S. Public Health Service, Washington, D. C., by Dr. John W. Tappan, United States public health officer, El Paso, and the laboratory work was done by Dr. Willis W. Waite, El Paso.

Roberts-Banner Building.

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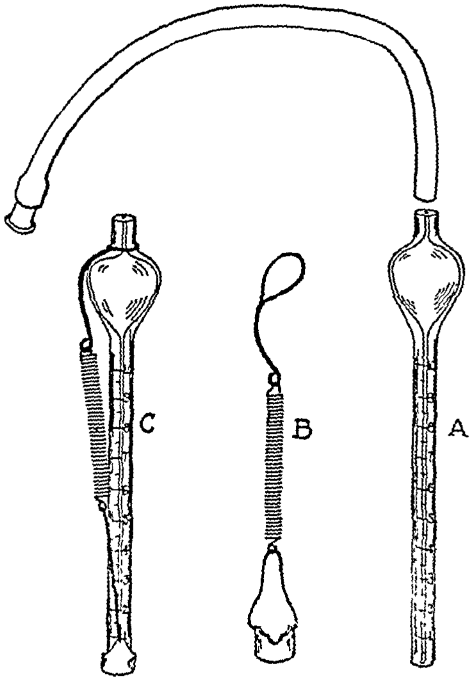
[1] Francis, Edward: Tularemia, J. A. M. A. 84:1243 (April 25) 1925.

SEALING DEVICE FOR HEMATOCRIT *

C. M. Van Allen, M.D., New Haven, Conn.

An hematocrit that has proved satisfactory because of its accuracy and simplicity and the small amount of blood required has already been described.[1] Recently, the efficiency of the instrument has been improved, by the substitution of a mechanical sealing device for the rubber band originally employed for the purpose of closing the lower end of the hematocrit during centrifugalization.



Sealing device for hematocrit.

The complete apparatus in its improved form is shown in the accompanying illustration. The hematocrit (*A*) consists in a capillary bulb pipet about 10 cm. in length. The shaft, from the lower extremity to the bulb, is graduated in a scale of 100 parts, the bore beneath this scale being of uniform caliber. A rubber mouth tube is fitted above the bulb. The sealing clip (*B*) is constructed of three parts: a wire loop to fit over the bulb; a metal cup, rubber cushioned, to enclose the end of the shaft, and a coil spring to retain the clip in place (*C*). The cushion is a rubber disk, such as may be cut from a broad rubber band, and is renewed readily. This clip fits also the standard hemocytometer pipet and is of use in conveying the filled pipet from a distance to the laboratory. Directions for the use of the hematocrit will be found in the papers referred to above.

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* From the Laboratories of the Rockefeller Institute for Medical Research, New York.

* The hematocrit and sealing clip may be obtained from Arthur H. Thomas and Company, Philadelphia.

[1] Van Allen, C. M.: An Hematocrit Method, J. A. M. A. 84:202 (Jan. 17) 1925; J. Lab. & Clin. Med. 10:1027 (Sept.) 1925.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 26, 1925

LEAD POISONING

Within the brief period of thirteen years prior to the World War, more than 8,000 cases of plumbism with nearly 400 deaths were reported to the British Home Office as arising in the trades of the comparatively small population of Great Britain. Lead poisoning has existed from time immemorial. Students of the subject have ventured the statement that as little as 1 or 2 mg. of lead taken into the body each day is likely to lead to chronic poisoning. This represents a content of only one part of lead in 70,000,000 in the body of an adult of 70 kg. body weight. We cannot contemplate such possibilities without an appreciation of their seriousness. Guidance in combating the evil is eminently desirable.

It is therefore a fortunate circumstance that a group of investigators[1] working at the Harvard School of Public Health and the medical clinic of the Massachusetts General Hospital has been enabled to undertake a detailed study of the varied manifestations of a preventable hazard. The report of these investigators, recently made available, though reviewing much that has already been well established or clearly recognized, nevertheless serves to emphasize some of the factors—chemical, biologic, pathologic and clinical—that deserve emphasis at this time. The report makes evident anew that the route by which lead enters the organism most rapidly is the respiratory tract. Hence, the exposure to be most guarded against is the inhalation of finely divided particles. Next in danger comes the continued ingestion of lead compounds, and last of all, the possible slow cutaneous absorption in persons with tender, irritated or broken skin.

According to the Harvard studies, differences in distribution are found early in lead absorption, dependent on the route by which lead has entered the organism. Following absorption from the gastro-intestinal tract, the liver contains a relatively high concentration of lead as a result of the retention of this toxic substance, which it removes from the portal blood. From the lung or subcutaneous tissue, on the contrary, lead enters the general circulation; hence, only a small portion of it is carried directly to the liver. Once in the general circulation, the lead is distributed throughout the organism. Since the skeleton is the only tissue to retain permanently any significant amount of lead, an ever increasing percentage of the total absorbed lead comes to be stored in the bones. After absorption has ceased, this selective localization of lead becomes practically complete. While stored in such a deposit the lead is apparently harmless, since the symptoms of plumbism are noted only when lead is generally distributed throughout the organism, as a result either of recent absorption from an external source or of mobilization of a skeletal store.

On the basis of the thesis that, after absorption into the general circulation, lead is either stored in the skeleton or eliminated from the organism by excretion, the problem of treatment may be more rationally approached. Obviously, during severe intoxication it would be wise to facilitate storage of lead rather than rapid mobilization of the element, because the latter might increase the "toxic episodes." In this connection the Harvard toxicologists have reported an important analogy between the metabolism of calcium and that of lead. Various decalcifying agents have been shown to increase the lead output. Conversely, conditions favoring calcium retention tend toward a complete storage of lead in the bones. Consequently, during periods of danger it is advised to facilitate storage of lead by the ingestion of ample calcium, rather than to set the lead free. After the acute toxic manifestations have passed, elimination of lead may be accelerated by a low intake of calcium, acids and their ammonium salts, sodium bicarbonate and potassium iodid. Caution should be exercised in using these forms of treatment on patients with nephritis.

Chemical studies have indicated that the products of the reaction between secondary sodium phosphate and a lead salt are tertiary lead phosphate and acid. This lead salt is very stable at the normal hydrogen ion concentration of the body, but is sensitive to slight changes in acidity and passes into the more soluble di-lead salt readily. The marked solubility of lead and lead oxid in such body fluids as blood plasma may account for the high incidence of lead poisoning among workers exposed to lead fume and lead oxid dust. Both gastric and pancreatic juice may transform insoluble lead salts into more soluble forms and may therefore cause an increased absorption of lead compounds. Lead is probably transported in the blood stream in the form of colloidal lead phosphate, and deposited in the bone tissue as tertiary lead phosphate. Tertiary lead phosphate is sensitive to changes in acidity, particularly to variations caused by such acids as lactic; this may in part account for the fact that the concentration of lead in muscle is low and in bone tissue is high. The sensitiveness of tertiary lead phosphate to changes in hydrogen ion concentration may be an important factor in the frequent development of acute lead intoxication following acute infection or acidosis. It is generally agreed that by far the greater proportion of eliminated lead leaves the body with the feces. This is true of various other elements, such as calcium and iron. Some of them use the pathway of the bile as well as the gastro-intestinal epithelium. Small amounts of lead usually escape simultaneously through the kidneys. As one cannot readily determine whether fecal lead has actually been absorbed and reexcreted into the bowel, or merely has passed unchanged through the alimentary canal, the detection of lead in the urine is of greater clinical and diagnostic significance than the proof of its presence in the stools.

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[1] Aub, J. C.; Fairhall, L. T.; Minot, A. S., and Reznikoff, P.: Lead Poisoning, Medicine 4: 1 (Feb.-May) 1925.

The sources of lead poisoning are manifold. Plumbism is a menace of many well recognized trades. There are, however, unsuspected byways through which lead may find its way into the body. One of these is contaminated alcoholic liquors. Instances of lead poisoning from the consumption of "moonshine" whisky evidently contaminated by the stills have been reported.[2] Among eighteen samples of liquor known to be used by saturnines, all except two showed the presence of lead. Inappropriate apparatus used in the manufacture and storage of wines and distilled liquors account for these disconcerting findings. The widespread use of containers glazed with lead compounds and the careless use of leaden or soldered containers in the preparation of home-made beverages are, therefore, matters of concern from the point of view of health.

A NEW FEATURE OF VITAMIN DEFICIENCY

Despite much investigation during the last decade as to the nature of deficiency diseases, little more has been done than to scratch the surface. Rapid additions to our knowledge, such as the spectacular discovery that pure cholesterol can be given vitamin activity through the influence of ultraviolet radiation, continue to be announced. Information that most concerns the practicing physician, namely, the extent to which minor degrees of vitamin deficiency modify human health, is still lacking, however. What relation, if any, has vitamin deficiency to resistance to infection, to fatigue, to well being? Most of the investigation of vitamins up to the present having been carried out in the laboratories of the physiologists and biochemists, the anatomic changes resulting from dietary deficiency have perhaps not yet been investigated as much as may be profitable. At least that is the inference that may be drawn from the interesting observations just reported by a pathologist, Wolbach of Harvard, on the effects of protracted deprivation of fat-soluble A vitamin.[1]

It has long been known that changes occur in the eye, the so-called xerophthalmia or keratomalacia, associated with drying, hornification and infection of the cornea, which have been considered to be characteristic of a deficiency of fat-soluble A. Wolbach and Howe find, however, that the eye changes are by no means the only anatomic effects of this deficiency, for they are only a part of a remarkable, widespread tendency for transformation of secreting and ductal columnar epithelium, or of transitional epithelium, into the heavily hornified type of epithelium normally serving for protective purposes. This metaplasia is found not only in the cornea and parocular glands, but even more extensively in the entire respiratory tract, from nose to bronchi; it is also found in the lining epithelium of the urinary passages, the salivary glands, the prostate, the uterus and oviducts, and the pancreatic ducts. Besides this tendency to keratinization there occurs a marked loss of fat, despite the presence of an abundance of fat in the animal's diet, and atrophy of glandular organs, especially the testes, spleen and salivary glands; but these atrophic changes are produced also by a deficiency of some of the other vitamins. Necropsy in a single case of deficiency of fat-soluble A in a child[2] has revealed hornification of the epithelium in the lungs, uterus, submaxillary glands, pancreatic ducts and renal pelvis, so that this effect seems to be a general one.

The process of keratinization begins in numerous foci, apparently independent of local infection or trauma, and spreads out from these, sometimes the hornified cells underlying for a time the original epithelium, which eventually is lost. Sometimes this process becomes so extensive that the hornified masses obstruct ducts, so that cysts are produced, and in the lungs bronchiectatic cavities form. A feature that is certain to arouse discussion is the resemblance at times of this proliferation of hornifying epithelium to the early stages of carcinoma formation, especially since occasionally metaplasia of columnar to stratified epithelium precedes carcinoma formation, particularly in the lungs and renal pelvis. Is it possible that a deficiency in fat-soluble A has anything to do with the formation of squamous cell carcinoma? At first glance this seems unlikely, for in general good nutrition seems to be more favorable for cancer formation than poor nutrition. But as yet we know too little about the relation of nutrition to cancer, or about the relation of vitamin content of human food to vitamin absorption and utilization, to speak with any assurance on this question. In any event, the demonstration that an absence of something in the food may cause active overgrowth and change in the character of body cells is an important episode, with stimulating possibilities for future developments.

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[2] Vaughan, W. T.: Lead Poisoning from Drinking "Moonshine" Whisky, J. A. M. A. **79**: 966 (Sept. 16) 1922.

[1] Wolbach, S. B., and Howe, P. R.: J. Exper. Med. **42**: 753 (Dec.) 1925.

[2] Wilson, J. R., and DuBois, R. O.: Keratomalacia in Infant, with Postmortem Examination, Am. J. Dis. Child. **26**: 431 (Nov.) 1923.

THE CAPILLARY PERMEABILITY OF DIFFERENT ORGANS

Whether the exchange between the blood and the fluid in the lymphatic system proceeds entirely according to simple physicochemical principles was the subject of active discussion thirty years ago. There was an outspoken tendency at that period to abandon all so-called vitalistic explanations of circulatory phenomena in the body so far as current knowledge would permit. Mechanical theories became dominant. In connection with the origin of lymph,[1] it was pointed out that the forces in activity are, first, intracapillary pressure, tending to filter the plasma through the endothelial cells composing the walls of the capillaries; and, second, molecular energy in the form that gives rise to the phenomena of diffusion and osmotic pressure. By the action of this force, the flow of water from one place to another is influenced in accordance with the difference in concentration of the dissolved substances. These two forces acting everywhere control primarily the amount and composition of the lymph.

The foregoing theory, which has enjoyed a long survival of popularity, has not persisted without meeting serious obstacles. There are admitted phenomena that are difficult of explanation on the basis just propounded. The flow of lymph varies widely in different regions of the body, and there are some differences of composition. Consequently there has been a disposition to assume an added physiologic factor—something related to the boundaries between the blood and lymph streams, the cellular vessel walls. A recent writer,[2] in discussing the dilemma, points out that, desirable as it is to draw on physical and chemical forces for the explanation of fluid exchange, it is nevertheless impossible to escape the belief that the individual endothelial cells have the ability to regulate to some degree the transport of substances through their cell wall and cytoplasm. As an example, he adds that the lymph has frequently been considered a product of endothelial activity.

Under the test of experiment, Lee[2] has found anew that a definite change in the blood, such as the introduction of foreign substances, may produce unlike lymphatic responses in different regions. The lymph or tissue fluid derived from the brain capillaries does not invariably correspond with the *lymph originating* from the capillaries of the viscera under such circumstances. In other words, there seems to be a fundamental difference in the behavior of blood capillaries of different organs. In Lee's tests, the small vessels of the brain did not dilate like the visceral capillaries after histamin was given. They did not indicate the same fluid exchange with crystalloids as did the capillaries in organs drained by the lymphatic system. Furthermore, the passage of particles of India ink from the blood to the lymph vessels of the liver indicated the high degree of permeability in the blood vascular bed of that organ. Accordingly, there is something cogent in Lee's deduction, from such physiologic differences, that the capillaries in every organ are adapted particularly for the function of the organ in question. Whether this adaptation is an inherent quality of the capillary endothelium or whether it is due to influences arising in the tissue around the vessel, or both, cannot be stated. It is obvious, Lee concludes, that explanations based, even though only partly, on known physical and chemical laws are preferable to views depending on indefinite properties of cytoplasm; unfortunately, these laws do not completely suffice, and therefore an active participation of the endothelial cells must be considered.

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[1] This statement of the current theories is taken from Howell, W. H.: Text-Book of Physiology, Ed. 9, Philadelphia, W. B Saunders Company, 1925.

[2] Lee, F. C.: A *Note on* Differences of Capillary Activity, Am. J. Physiol. **74**: 326 (Oct.) 1925.

UREA AS A DIURETIC

The once widely fostered belief that the intoxication of uremia is due chiefly to substances that are normally eliminated in the urine has practically been abandoned. If any chemical compound is to be held responsible, it seems more likely to be found among more harmful by-products of metabolism that accumulate in the blood. At any rate urea, the most prominent and abundant of all the ordinary urine components, has lost the reputation for pronounced toxicity with which it was formerly endowed. The body will withstand introduction of large quantities of urea without appreciable harm, and this nitrogenous catabolite is freely distributed throughout the fluids and tissues of the organism and appears to be eliminated with comparative ease. According to Hewlett[1] and his co-workers, after the ingestion of 100 gm. of urea by normal persons, the urea nitrogen of the blood can be raised to a figure comparable with that obtained in cases of chronic nephritis. When the blood urea exceeds 70 mg. per hundred cubic centimeters, symptoms of headache, dizziness and slight somnolence may occur. Whether these are due to the sudden alteration in the composition of the body fluids and tissues, or whether they are toxic effects produced by the urea itself, has not been determined.

The foregoing instances represent extremes of urea concentration in the blood. Confidence in the relative harmlessness of urea when the function of the kidneys is good rather than impaired was exhibited more than a quarter century ago when the use of the substance as a diuretic was proposed. That it can be given with impunity to patients over long periods has been demonstrated anew by Crawford and McIntosh[2] at the Hospital of the Rockefeller Institute for Medical Research. They have administered it in doses of from 30 to 60 gm. a day in cases of advanced cardiac decompensation that have not responded satisfactorily to the methods usually employed in the treatment of cardiac edema.

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[1] Hewlett, A. W.; Gilbert, Q. O., and Wickett, A. D.: The Toxic Effects of Urea on Normal Individuals, Arch. Int. Med. **18**: 636 (Nov.) 1916.

The choice of a diuretic is rarely an easy problem. Urea is rapidly absorbed, and an increase immediately occurs in the height of the urea in the blood. The mean level of the urea in the blood is dependent on the dosage, and the relationship between them is fairly constant in any particular case. The amount of urea excreted depends on the blood urea, so that with constant urea administration a state of equilibrium is reached between the intake and the output. Crawford and McIntosh further point out that during urea diuresis the excretion of water runs more or less parallel with that of urea, so that urine volume reflects the concentration of urea in the blood. Undoubtedly, they add, the explanation of the diuresis is that the excess of urea circulating in the blood is excreted by the kidney, and during the process carries with it a considerable amount of water. With continuous administration, the daily urine volume was maintained at an almost constant level in their patients. The response after administration was rapid, but the effect passed off in a short time, unless the dose was repeated. In contrast with various renal vasodilator drugs and kidney cell irritants, urea seems to function well in promoting a normal water balance in the body. The New York clinicians believe that it deserves a greater popularity.

Current Comment

IS THE PITUITARY ESSENTIAL TO LIFE?

Information regarding the actual functions of the pituitary gland is singularly conflicting. In few domains of physiology are equally contradictory data supplied by investigators of scientific repute.[3] Contrary to the earlier students of the subject, Paulesco[4] maintained the thesis that the hypophysis is necessary to life. His conclusions were based on the outcome of surgical extirpation of the pituitary and were subsequently supported by the independent observations of a number of experienced investigators, including Cushing and his co-workers in this country. It might be assumed that the failures to produce fatal conditions through hypophysectomy have been due to incomplete operations; yet postmortem examinations have left no warrant for such a conclusion. An explanation of the divergent results appears to have been furnished by Dandy and Reichert[5] of the department of surgery at the Johns Hopkins Hospital. They point out that, as an organ well secluded at the base of the brain and skull and attached to both at the central point, the hypophysis has offered great difficulties of operative approach preparatory to its extirpation. It seems likely, therefore, that for the seemingly paradoxical results now on record the operative procedure itself must be held responsible. Cerebral trauma is not easily averted. Lassitude, drowsiness and even coma, as well as convulsions, are occasional complications of human intracranial operations; and it has been precisely such symptoms that have attended the experimental hypophysectomies which have had a fatal outcome. Dandy and Reichert have perfected an operative technic that permits the safe removal of the hypophysis in dogs, the species about which the controversies have revolved. With their procedure the Baltimore surgeons have, as they express it, found no evidence to support, and every evidence to refute, the assumption that the hypophysis is essential to life, or that the group of symptoms described by others as preceding death in hypophysectomized animals is of hypophysial origin.

BACTERIOPHAGE NEWS

There is a fascinating aspect to the conception that bacteria are subject to enemies within their own camp. Mankind has been industrious in devising ways of destroying the harmful micro-organism by a great variety of devices. Chemical as well as physical agents have been requisitioned in this bitter warfare; and when there has been no adequate kind of ammunition devised or available, defensive barriers have been erected. Antisepsis has vied with asepsis as a protective device. There can be no cessation of activities, for the menace is ever present and seizes every advantage of laxity on the part of the armies of preventive medicine. Lack of preparedness invites momentary human disaster. In the midst of this tension has come the news of the bacteriophage, the reputed discovery of a filtrable, ultramicroscopic virus, parasitizing on and destroying actively growing, susceptible bacteria. Such a prospect of unsuspected potent help has been hailed with interest and enthusiasm not only by the scientist but also by the layman. Sinclair Lewis gave it publicity as a leading theme in the much discussed novel "Arrowsmith." It was d'Herelle's idea that there is only a single bacteriophage, common to man and animals, capable by adaptation of acquiring a virulence toward all bacterial species.[6] This view of the unity of the lytic principle has been considerably debated. Obviously the determination of whether there is a multiplicity of bacteriophagic agents, each of which is more or less specific for definite microbes, is of great importance in attempts to employ the bacteriophage in the warfare against infection. At the Rockefeller Institute for Medical Research, Bronfenbrenner and Korb[7] have lately observed persistent differences in the individual resistance of lytic filtrates active against different micro-organisms in ways that lead them to favor the conception of the multiplicity of bacteriophages. This dissipates, for the moment, at least, the hope of a single universal panacea for those infected with bacteria.

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[2] Crawford, J. H., and McIntosh, J. F.: The Use of Urea as a Diuretic in Advanced Heart Failure, Arch. Int. Med. **36**: 530 (Oct.) 1925.

[3] The Pituitary Gland, Glandular Therapy, Chicago, American Medical Association, 1925, p. 50. Howell, W. H.: Physiology of the Pituitary Gland, J. A. M. A. **83**: 1684 (Nov. 22) 1924.

[4] Paulesco, N. C.: L'hypophyse du cerveau, Paris, Vigot Frères, Eds., 1908.

[5] Dandy, W. E., and Reichert, F. L.: Studies on Experimental Hypophysectomy, I, Effect on the Maintenance of Life, Bull. Johns Hopkins Hosp. **37**: 1 (July) 1925.

[6] D'Herelle, F.: The Bacteriophage, English Translation by G. H. Smith, Baltimore, 1922.

Association News

THE DALLAS SESSION

Special Exhibit by the Section on Dermatology and Syphilology

In connection with the Dallas Session, the Section on Dermatology and Syphilology will again conduct an exhibit. The committee in charge is composed of E. D. Crutchfield, Galveston, Texas; Fred D. Weidman, Philadelphia, and I. L. McGlasson, San Antonio, Texas, chairman. According to the plans of the committee, the exhibit will not be miscellaneous but planned to illustrate the various phases of cancer, in all stages. It is intended to make it of interest to the profession at large as well as to the members of the section.

Circular letters explaining the exhibit, with application blanks, will be mailed to those who registered in the Section on Dermatology and Syphilology during any of the last five sessions. Others who desire this literature may obtain it by communicating with I. L. McGlasson, City National Bank Building, San Antonio, Texas. All applications must be sent to Dr. McGlasson by February 1.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Randolph F. Hunter and Dr. Harold W. Comfort have taken up their duties as chief surgeon and associate physician, respectively, at the Scotia Hospital, Scotia, succeeding Drs. Charles C. Cottrell and Frank K. Haight, both of whom recently resigned to engage in private practice.

Resolution About Anesthetists.—The Community Hospital, Long Beach, recently passed the following resolution regarding anesthetists:

> WHEREAS, The California Medical Association has declared that the administration of anesthesia is the practice of medicine.
>
> WHEREAS, The attorney-general of the state of California has ruled that the giving of an anesthetic is the practice of medicine.
>
> WHEREAS, The board of medical examiners of the state of California has ruled that the giving of an anesthetic is the practice of medicine.
>
> WHEREAS, It is against the spirit of the law, against the ethics of medicine, and against the ruling of a large majority of accredited hospitals for nurses or any one else not legally qualified to practice medicine to give an anesthetic in California.
>
> WHEREAS, The superior courts of two states of the United States have already handed down decisions fixing the liability for damages against hospitals in which nurses have administered anesthetics at the time of the death of the patient while under influence of the anesthetic, judgments against the hospital to the extent of $10,000 for damages in one case, and $150,000 in another case having been obtained.
>
> WHEREAS, The Community Hospital of Long Beach intends to comply with the spirit of the laws of the state of California, the code of ethics of the American Medical Association, and all the requirements for an accredited hospital; therefore, be it
>
> *Resolved,* That the administration of general and local anesthesias in the Community Hospital of Long Beach be limited and restricted exclusively to Doctors of Medicine (M.D.'s) legally qualified to practice medicine and surgery in the state of California.

FLORIDA

En Route to Florida.—The secretary of the California State Board of Medical Examiners notified the Florida Board of Examiners, November 10, that one A. L. Oxford, who had in some way obtained the California license to practice medicine of Dr. Fletcher A. Butler, deceased, was on his way to Florida. A complaint was filed against Oxford in Los Angeles, November 7, charging violation of the medical practice act; he is also said to have been arrested in 1924 for petty larceny.

GEORGIA

Pleadings in Suit for Fees.—The Georgia Court of Appeals has affirmed a judgment by which Dr. D. Granville Humphreys of Fernandina, Fla., was awarded $310, against J. H. Becker of St. Mary's, Georgia, for services rendered a third person at Becker's request. Liability was denied by Becker in the court of appeals because Humphreys had not alleged in his pleadings that he had been licensed to practice in Georgia. The court held that in an action for the value of professional services, it is sufficient for a physician to allege that he is a physician, that he was employed as such, that he rendered the services alleged, and that the reasonable value of such services was the amount sued for. The court held further that the law does not raise an implied promise by a third person to pay for professional services rendered a patient at his request, but that a physician must prove an understanding between himself and the third person that the third person, and not the patient, would pay.

IDAHO

Personal.—The governor has appointed Dr. Ralph M. Fouch, American Falls, medical adviser of the state department of public welfare, to succeed Dr. Frank W. Almond, resigned.

ILLINOIS

Scarlet Fever Increasing.—The prevalence of scarlet fever in the state is 25 per cent. in excess of what it was this time last year, and, according to the state department of health, it is steadily increasing; 414 cases were reported last week, whereas 109 were reported the first week in October. The department says that the greatest monthly prevalence of scarlet fever in the state habitually occurs in January.

Chicago

Medical History Club.—The medical history club, recently organized at the University of Illinois College of Medicine, was addressed by Mr. Christian Bay of the John Crerar Library, November 4, on "Observations of a Medical Librarian Abroad"; by Arthur H. Daniels, Ph.D., dean of the Graduate School, University of Illinois, December 2, on "The Philosophy of Spinoza," and by Dr. Morris Fishbein, December 16, on "Eclecticism." The next lecture will be by Dr. Basil C. H. Harvey of the University of Chicago, on "Vesalius."

Dr. Falls Appointed Professor at Illinois.—Dr. Frederick H. Falls, Iowa City, has accepted the appointment of professor and head of the department of obstetrics and gynecology at the University of Illinois College of Medicine, Chicago. Dr. Falls, who formerly was an instructor in that department at Illinois, has since 1921 been head of the department of obstetrics and gynecology at the State University of Iowa College of Medicine, Iowa City; he is a graduate of the University of Chicago and Rush Medical College, and has a master's degree from the University of Illinois. ——The announcement in THE JOURNAL, December 12, of the appointment of Dr. Carl A. Hedblom should have been as professor and head of the department of surgery at the University of Illinois.

Rawson Laboratories Dedicated.—The new Rawson Laboratories connected with Rush Medical College were dedicated with appropriate ceremonies, December 18. The building is five stories high, of steel construction, joined on one side with the Presbyterian Hospital and on the other with the Senn Memorial building. On the first floor are administrative offices and library built for more than 25,000 volumes; the second, third and fourth floors are for classrooms, examining rooms, reception rooms and special laboratories. Surgery occupies the entire fourth floor, and the Norman Bridge pathologic laboratories the fifth floor. The Central Free Dispensary, which last year treated more than 100,000 persons, will be in this building and the Senn Memorial building. There is a children's play room for mothers who, in seeking treatment, bring their children, and a play director in charge. There are small treatment rooms throughout the building, two operating rooms on the fourth floor for minor operations, and various small laboratories for medical research for advanced students. The laboratories have the latest improvements. The building generally is of the most modern type.

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[7] Bronfenbrenner, J. J., and Korb, C.: Studies on the Bacteriophage of d'Herelle, IV, Concerning the Oneness of the Bacteriophage, J. Exper. Med. **42**: 821 (Dec.) 1925.

INDIANA

[illegible] Board of Health.—According to the [illegible] or-elect Duvall has announced the [illegible] E. Padgett to be president of the board of health, and of Dr. William E. Mendenhall, Dr. Arthur E. Guedel and Dr. Frederick E. Jackson as members.

Personal.—Dr. Charles L. Cabalzer, Indianapolis, has been elected president of the staff of the Methodist Hospital for the coming year.——Dr. William A. Buchanan has been appointed for the third time commissioner of health of Hammond.——Dr. Urval C. Ambrose has been appointed a member of the board of directors of the Indiana Christian Hospital, Indianapolis.——Mayor-elect Tinkham of Gary has announced the appointment of Dr. William M. Bigger as president of the board of health, and Dr. William A. Buchanan as secretary.

Annual Report of State Board of Health.—The birth rate in Indiana in 1924 was the highest recorded in ten years (22.4); the death rate from diphtheria, scarlet fever, tuberculosis and maternal causes, and the infant mortality rate were the lowest on record. There were 534 deaths in the state from automobile accidents, as against 362 in 1922, and this cause now leads all other accidental causes of deaths. Among 208 brains of dogs and other domestic animals examined for rabies, seventy-six were positive, and ninety-two persons were given the Pasteur antirabic treatment in the laboratory. The division of school hygiene made sanitary surveys of 139 school buildings, condemning thirty-eight, practically all of which were old one-room structures; the division also approved plans for ninety-three new school buildings and specifications for remodeling seventy-seven old school buildings. Health films were shown to more than 23,000 people by the division of child hygiene, which also held 1,938 mothers' classes, with an attendance of about 48,000.

KANSAS

Personal.—Dr. Fred C. Cave, Grainfield, who has been appointed full-time health officer for Ellis County, assumed his duties, November 1.——Dr. Sydney P. Loomis, formerly of Lost Springs, has purchased the Virginia Hotel at Herington, which he will convert into a hospital.

LOUISIANA

Hospital News.—The French Hospital, New Orleans, which for sixty years has been maintained by a society of persons of French descent, is being remodeled from a forty-five bed hospital to a ninety-bed hospital and will be at the service of the entire city. The institution is owned by the Société Française de Bienfaisance et Assistance Mutuelle.

Gifts to Hospitals.—Mr. Luca Vaccaro has given $10,000 to the Southern Baptist Hospital, New Orleans, to equip the roentgen-ray department. The hospital will be formally opened in January.——Mrs. John Dibert has given to the Eye, Ear, Nose and Throat Hospital, New Orleans, another gift of $50,000, making her total donation to that institution $135,000.

Society News.—The Orleans Parish Medical Society, New Orleans, has unanimously recommended Mr. F. W. Evans, vice chairman of the board of Charity Hospital, for the award of the annual *Times-Picayune* cup given to the citizen doing the greatest work of outstanding character.——The annual dinner of the Orleans Parish Medical Society was held, December 12, following the annual election.

Professor Castellani En Route to New Orleans.—Prof. Aldo Castellani sailed from London, December 16, for New York en route to New Orleans to take up his duties as professor and head of the department of tropical diseases at Tulane University of Louisiana School of Medicine. According to Dean Bass, new office and laboratory equipment is now being installed in the Hutchinson Memorial building so that Professor Castellani can take up the organization of his department on arrival. It will be essentially a research department. It will provide service for the Charity Hospital, and give instruction to the undergraduate classes. Although not formally enrolled in the faculty of the graduate school, Professor Castellani will give graduate instruction (The Journal, November 7, p. 1494).

MARYLAND

Joint Meeting on Cancer.—A joint meeting of the Maryland Cancer Committee, the Baltimore City Medical Society and the Baltimore City Dental Society was held, December 18, at Osler Hall, Baltimore, to discuss "Research Work on Cancer in This Country and Abroad." Dr. George A. Soper, managing director, American Society for the Control of Cancer, who has just returned from Europe, discussed the work of Gye and Barnard; Dr. William H. Woglom, associate professor of cancer research, Columbia University College of Physicians and Surgeons, New York, discussed the experimental side of cancer in relation to diagnosis and treatment, and Dr. William H. Welch, director, Johns Hopkins School of Hygiene and Public Health, discussed both subjects.

Anniversary of Medical School.—The one hundred and eighteenth anniversary of the founding of the School of Medicine of the University of Maryland was commemorated, December 17, by a banquet at the Hotel Emerson, which members of the faculty and alumni from New York, Philadelphia, Baltimore, Washington and other cities attended. Chartered by the legislature, Dec. 7, 1807, as the College of Medicine of Maryland, it was the first unit of the University of Maryland, the sixth institution of collegiate standing to be founded in Maryland, and the third in Baltimore, and also the fifth medical school to be established in this country. Dr. John B. Davidge, who settled in Baltimore in 1796, the year in which the city received its charter, was the founder, and Dr. James Cocke, a native of Virginia, and Dr. John Shaw of Annapolis were his associates. At the banquet, December 17, Dr. Arthur M. Shipley, professor of surgery, was toastmaster, and among the speakers were Dr. William S. Love, president, alumni association; Dr. Maurice C. Pincoffs, professor of medicine, and Dr. James M. H. Rowland, dean of the medical department.

MASSACHUSETTS

Personal.—George E. Vincent, Ph.D., president of the Rockefeller Foundation, New York, will deliver an address at the celebration of the fiftieth anniversary of the Boston Medical Library, Jan. 19, 1926.

Hospital News.—The Florence Crittenden League of Compassion has dedicated a new maternity hospital and home on the site of the old Peter Faneuil homestead, Oak Square, Brighton. The league is conducting a campaign to raise $150,000 to carry on this work.

Society News.—Dr. Harry C. Solomon, Boston, addressed the North Shore Medical Fraternity at Lynn, November 24, on "Epilepsy: Its Various Forms and Treatment."——Prof. Vittorio Putti addressed the Harvard Medical Society at the Peter Bent Brigham Hospital, Boston, November 30, on "History of the University of Bologna."

MICHIGAN

Diphtheria Immunization at Niles.—Local physicians and nurses cooperated with the health officer of Niles during the last four weeks to administer toxin-antitoxin to the 1,200 school children to immunize them against diphtheria. According to the Niles *Star,* this work was completed before there had been any serious outbreak of diphtheria this year. This was part of the program of the state board of health to eradicate diphtheria from the state. The physicians donated their services for this work.

Society News.—Dr. John Shelton Horsley, Richmond, Va., addressed the Wayne County Medical Society, Detroit, December 21, on "Biologic Principles Underlying Gastric Surgery."——Dr. Herman B. Van Wyck of the University of Toronto Faculty of Medicine addressed the Bay County Medical Society at Bay City, recently, on "Toxemias of Pregnancy."——The Alpena County Medical Society put on a program at Bay City recently in return for a program presented by local members at Alpena last May.——Dr. Hugh T. Patrick, Chicago, emeritus professor of neurology, Northwestern University Medical School, addressed the annual meeting of the Kent County Medical Society, Grand Rapids, December 16, on "Some Phases of Psychanalysis."

MINNESOTA

Society News.—Dr. David [illegible] ected president of the Minnesota [illegible] and Otolaryngology, and Dr. John H. Morse, secretary-treasurer.

Outbreak of Poliomyelitis.—At the annual meeting of the Minnesota State Sanitary Convention, St. Paul, November 5-6, Dr. Orianna McDaniel, director of the division of preventable diseases, state department of health, stated that there had been ninety-one deaths so far in the outbreak of poliomyelitis in the state since June 1, and that cases had been reported from eighty-one of the eighty-seven counties.

MISSOURI

The Adcox Confession (continued).—Adcox compares the "opening up" of Connecticut to "bringing in" a gusher in an oil field. He says in the St. Louis *Star*, that he knew nothing about conditions in Connecticut, heretofore, but he decided to tap the field with two unusually dumb men, who had $1,500 each to pay for a license. Adcox attempted in other places to get licenses for these boys, but they were so stupid that both failed to get by after he had things fixed. He called them to his home and offered to take them to Connecticut, provided they paid expenses. On arrival at the Guarde Hotel, New Haven, Adcox warned his "dumb-bells" to stay in their rooms and not talk to anybody, then went to the lobby and met the "famous fixer" who had opened up Arkansas. "Famous fixer" forbade Adcox to work in Connecticut, but the next morning, Adcox and his "dumb-bells" were the first to arrive at the examination room. Adcox, sitting between the two, wrote the examination himself and passed answers, fore and aft, for practically all the questions. "Famous fixer" and his delegation obtained the questions to be asked the next day and worked all night writing up their papers. All but one of "famous fixer's" clients passed the examination, and he was so illiterate that the board could not read his papers. Adcox's "dumb-bells" passed, but he failed, having been so busy helping others and finding out what was going on. Before the party broke up, "famous fixer" warned Adcox that although he got by this time in Connecticut, he had seen to it that he would not be on deck the next trip; he told the truth, for shortly after Adcox returned to St. Louis, "we were informed" that the diplomas of the St. Louis school would no longer be recognized in Connecticut. Adcox had at that time fifteen prospects who wanted to make the next trip. The author takes time out here to say that in all the history of medicine or of state government there has never been anything as rotten as the scandal in Connecticut. There were no requirements or restrictions, and any person willing to pay could obtain a license. The type of person that took advantage of the offer was the ignorant immigrant who knew little English and the lowest of laborers; men who had driven dump carts in January were administering anesthetics and operating for appendicitis in February; scores of murders were committed in the name of science, he says, and were covered up by phraseology in death certificates. Men too ignorant to be called quacks, who would not be tolerated in any other state, found a haven in Connecticut, and they organized, and became a potent political power. It was this, Adcox says, which he saw with his own eyes, that brought him to realize the seriousness of his offenses and caused him to determine to end his career; not yet, however, for he made plans to defeat the "famous fixer" by sending him prospects who would purchase diplomas from his institution. With Connecticut refusing now to admit applicants from the St. Louis school, Adcox sent his "graduates" to Kansas City to graduate again. "Famous fixer" not only controlled the situation in Connecticut but actually set the dates for the state board examinations; he brought with him to the Guarde Hotel, New Haven, blank diplomas for the easterners who had not gone west for "commencement" and for such unexpected applicants as put in an appearance. He failed once to obtain the questions in advance, so he called his "applicants" together and told them to go slow and he would get the questions at noon. He not only kept his word but had the meeting of the board adjourned until the next morning and devoted the afternoon and night to preparing examination papers.

Ralph Voigt went to Connecticut on one trip for Adcox, taking several "young men." He arrived too late for the examination, but a member of the board took the whole delegation to a hotel and gave oral examinations; one of this bunch, Adcox says, now has a large practice in Richmond as an eye specialist. On his numerous visits, Adcox saw matters steadily growing worse in Connecticut. Hospitals were being operated by quacks, every known "ism" was practiced, and quacks were selling their whisky prescriptions for $3 apiece. He saw now that the diploma mill had grown too big to control and that it must soon fall by its own weight. He returned to St. Louis from Connecticut, and resolved to quit the business. Before long, however, a young man who had been his neighbor for several weeks came to his home with his throat swathed in bandages. While Adcox was treating him for tonsillitis, he indicated that he had always wanted to be a doctor but had never had the chance; here, then, was another prospect, so Adcox offered to make "Harry Thompson" a doctor.

NEW JERSEY

Hospital News.—The new $1,000,000 Englewood Hospital, paid for wholly by popular subscription, was dedicated, November 27; officials and residents of twenty-two communities in New Jersey's Northern Valley attended the ceremony.

Society News.—Dr. Arthur C. Morgan, Philadelphia, conducted a bedside clinic before the Atlantic County Medical Society, November 15, at the City Hospital, and addressed the society on "Internal Medicine."——Dr. Livingston Farrand, president of Cornell University, Ithaca, N. Y., addressed the Essex County Medical Society at Newark, December 10, on "The Responsibilities of the Medical Profession to the Community."

NEW YORK CITY

Dr. Wood to Investigate Cancer Research.—Dr. Francis Carter Wood, vice president of the American Society for the Control of Cancer, sailed, December 9, according to press reports, for Europe to investigate the various recent reports on cancer research in England, and on his return will make an official report of his investigation.

Medical Diploma Stolen.—Dr. James J. Short, 110 West Fifty-Fifth Street, writes that a news item in The Journal, November 7, prompted him to report that about a year ago his medical diploma disappeared as the result of a robbery which took place while he was making professional calls. Dr. Short graduated from the University of Buffalo Department of Medicine in 1918.

Another Convalescent Home.—The family of the late J. Kennedy Tod has given his estate at Oyster Bay to the Columbia-Presbyterian Medical Center for a convalescent home for patients. The property includes two small islands and a peninsula of 117 acres extending into Long Island Sound; also permanent buildings and a long sandy beach suitable for salt water bathing.

Society News.—Dr. Wendell C. Phillips, president-elect of the American Medical Association, addressed the First District Dental Society at the Hotel Pennsylvania, December 3.——Dr. J. L. Amster addressed the Bronx Surgical Society, November 25, on "Postoperative Fecal Fistual Communicating with Ovarian Dermoid," and Dr. Benjamin Sherwin on "The Treatment of Acute Peritonitis."——Dr. Philip Liebling addressed the Bronx Gynecological and Obstetrical Society, November 30, on "Purpura Hemorrhagica."——The twentieth annual meeting of the Woman's Medical Society at New York will be held at the Hotel McAlpin, March 29, 1926.——Dr. S. Adolphus Knopf addressed the Medical Association of the Greater City of New York, December 21, at the New York Academy of Medicine on "Birth Control; Sanitary, Medical and Moral Aspects."——Dr. Thomas J. Harris addressed the New York Academy of Medicine in a program arranged in cooperation with the Section of Laryngology and Rhinology, December 17, on "End-Results of Tonsillectomy, with Especial Reference to the Legal Responsibility."——The Riverside Medical Society gave a dinner, December 15, at the Hotel Majestic in honor of Dr. Lewis G. Cole, who addressed the society on "Gastric Motor Phenomena," illustrated with motion pictures.——Dr. Emilius C. Dudley, emeritus professor of gynecology, Northwestern University School of Medicine, Chicago, addressed the Bay Ridge Medical Society, December 8.——Dr. Edward A. Strecker, Philadelphia, addressed the Medical Society of the County of New York, December 28, on "The Psychoneuroses with Particular Reference to Their Management."——The Yorkville Medical Society conducted a symposium on "Blindness Due to Sinus Disease," December 21, arranged by the otolaryngological department of Beth Israel Hospital, and were addressed by Dr. Ralph Almour on "The Ear as a Diagnostic Aid in Syphilis," and by Dr. Mervin C. Myerson on "Medical Bronchoscopy."

OHIO

Dr. Lavender Appointed Health Officer.—Dr. De Witt C. Lavender has been appointed health commissioner of Mansfield and Richland County to succeed Dr. William De Kleine, resigned, who will go to Fargo, N. D., to take charge of the American Child Demonstration there. Dr. Lavender heretofore was the deputy health commissioner.

Course in Plastic Surgery.—For the first time in this country since the World War, a course in plastic facial surgery was given this month at the University of Cincinnati College of Medicine, under the direction of the departments of anatomy and otolaryngology; the instructors were Dr. Oscar V. Batson, professor of anatomy, and Dr. Samuel Iglauer, professor of laryngology, assisted by Dr. Jacques Maliniak.

Professor Mathews on Leave.—Albert P. Mathews, Ph.D., professor of biochemistry, University of Cincinnati College of Medicine, Cincinnati, is in England on sabbatical leave, working with Prof. Edward C. Baly of the department of physical chemistry, and with Professor Ramsden of the department of physiology, at the University of Liverpool; he will also be at Oxford a short time to visit Professor Halliburton in London, and spend several months on the continent, and next June he will attend the celebration of the five hundreth anniversary of the University of Louvain.

Personal.—Dr. John H. Baird, formerly with the Veterans' Hospital in the Bronx, New York, has been detailed as clinical director of the Veterans' Bureau Hospital No. 97, at Camp Sherman, near Chillicothe.——Dr. Perry I. Tussing was elected president of the Allen County Academy of Medicine, Lima, November 17, at which time he addressed the academy on "Diseases of the Heart."——Dr. Robert C. Longfellow, Toledo, is at present house physician for American and English-speaking tourists at the Khedivial Hotel, Cairo, Egypt; he will return next spring.——Dr. M. Murray Levine has resigned from the staff of the Cleveland State Hospital, Cleveland, to engage in private practice in that city.——Dr. Trent A. B. Denison has resigned as superintendent of Lakeside Hospital, Cleveland, to engage in private practice.——Dr. William J. M. Scott, instructor in surgery, Western Reserve University School of Medicine, Cleveland, is leaving to accept the position of assistant professor of surgery in the new Rochester Medical School, Rochester, N. Y., Jan. 1, 1926.——Dr. Emile Holman, assistant professor of surgery, Western Reserve University School of Medicine, is leaving to accept the position of associate professor of surgery at Stanford University, California, Jan. 1, 1926.——Dr. James M. Snider, Marysville, has been appointed a member of the Union County Board of Pension Examiners, succeeding the late Dr. Lutrelle Henderson.——Dr. John DeForest Smith has been reelected president of the Horticultural Society of Dayton.——Dr. Ralph W. Holmes, Chillicothe, has been elected president of the Ross County Academy of Medicine.——Dr. Aaron F. Basinger has been elected president of the medical staff of the City Hospital, Lima.

OREGON

License Revoked.—The state board of medical examiners reports that the reciprocity license of Dr. Wilbur W. Illsley, Hermiston, Ore., was revoked at a meeting of the board, November 12; Dr. Illsley is still licensed to practice osteopathy in Oregon.

PENNSYLVANIA

Society News.—Dr. William D. Stroud of the Graduate School of Medicine, University of Pennsylvania, Philadelphia, addressed the Berks County Medical Society at the November meeting on "Prognosis in Heart Disease."——Dr. Alexander H. Colwell addressed the Fayette County Medical Society at Union Town, November 5, on "The Treatment of Emergencies in Heart Practice."——Dr. Thomas G. Simonton, associate professor of medicine, University of Pittsburgh School of Medicine, and Dr. Harold A. Miller, professor of obstetrics, University of Pittsburgh School of Medicine, addressed the Mercer County Medical Society recently on "Referred Pain in Pneumonia" and "Pyelitis in Pregnancy," respectively.

Pittsburgh Skin and Cancer Foundation.—In the annual report of this foundation, President Judge Reed shows that the attendance in its second year has doubled; that 557 new cases were received and 301 clinics held; of the new cases 410 were in the new skin department, ninety-three in the cancer department, of which sixteen were referred to private physicians, twenty-two were improved, two died and fifty-three are still under treatment. A department of gastro-enterology has been established under the direction of Dr. Herbert L. Jones, and a study is being made to determine any relation that may exist between gastro-intestinal and dermatologic conditions. The treatment rooms and office are at 1901 Fifth Avenue.

Philadelphia

Personal.—Dr. Edmund B. Piper has been appointed on the gynecologic and obstetric staff of the Philadelphia General Hospital to fill the vacancy caused by the death of Dr. John Cooke Hirst.

Society News.—Dr. James F. Donnelly has been elected president of the Philadelphia Clinical Association; Drs. Ernest G. Maier and Samuel P. Gerhard, vice presidents; Dr. William H. Thomas, treasurer, and Dr. Louis R. Wiley, secretary.

Biologic Abstracts.—The Rockefeller Foundation has given $350,000 to establish a biologic abstract service in Philadelphia covering the whole field of pure and applied botany and zoology. *Botanical Abstracts, Abstracts in Bacteriology* and the abstracting service of several other journals will be merged with the new service. According to the *Atlantic Medical Journal*, about 35,000 abstracts will be published annually, including papers prepared through the collaboration of biologists. The service will be conducted under the auspices of the Union of Biologic Societies of America, with headquarters at the University of Pennsylvania. The monthly journal will be known as *Biological Abstracts.* Jacob R. Schramm, Ph.D., of Cornell University, Ithaca, N. Y., has been made editor in chief and John A. Detlefsen, Sc.D., formerly of the University of Illinois and the Wistar Institute of the University of Pennsylvania, associate editor in the field of animal biology.

RHODE ISLAND

Society News.—Dr. Wilfred Pickles addressed the Providence Medical Association recently on "Sacral Anesthesia," and Dr. Elliot A. Shaw on "Some Problems Presented by Patients with Jaundice." Dr. Robert M. Lord addressed the association, November 2, on "A Report on Fifty Cases of Pyelitis in Children."

TENNESSEE

Tri-State Association Meeting.—The forty-second annual meeting of the Tri-State Medical Association will be in Memphis, Jan. 26-28, 1926, at the Hotel Peabody. This organization has held annual meetings ever since its founding in 1883, except in 1917 and 1918; last year the association honored Dr. Henry C. Dunavant of Osceola, Ark., the surviving member of the committee which wrote the constitution in 1883. Five members from each of the three states have been selected to present papers at this meeting in addition to other speakers, among whom will be Dr. Martin H. Fischer, professor of physiology, University of Cincinnati School of Medicine; Dr. Rudolph Matas, professor of general and clinical surgery, Tulane University of Louisiana School of Medicine; Dr. Thomas R. Brown, professor of clinical medicine, Johns Hopkins University Medical Department; Dr. Julius H. Hess, professor and head of the division of pediatrics, University of Illinois College of Medicine, and Dr. Bethuel B. Vincent Lyon, Philadelphia.

TEXAS

Publicity in Common.—The Dallas County Medical Society, Dallas, recently passed the following resolution:

> *Resolved,* That in appreciation of the scientific standards maintained by the dental profession generally, and out of the high regard that the Dallas County Medical Society has for the Dallas Dental Society, we extend an invitation to have such publicity committee as may exist, or may be appointed by their president, meet with a like committee of our own, to discuss publicity in which the two professions have a common interest.

Society News.—Dr. Charles S. Hale, Cisco, has been elected president of the Eastland County Medical Society.——Dr. Ewin P. Hall, Fort Worth, addressed the Tarrant County Medical Society, recently, on "The Management of a Case of Obstetrics in the Home."—Dr. Louis K. Patton, Amarillo, addressed the Panhandle District Medical Society at Clarendon, recently, on "Mercurochrome Intravenously," and Dr. Robert B. Giles, Dallas, on "The Significance of Heart Murmurs."

WASHINGTON

Society News.—Dr. Alfred H. Winkel recently addressed the Seattle Academy of Medicine on "Thoracoplasty."——The King County Medical Society, Seattle, gave a complimentary get-together dinner at the Olympic Hotel, December 14; all members who read a prepared speech and those talking more than ten minutes were fined $25; there will be no meeting of the medical section of the society, December 21, on account of the holidays.

Cult Bills.—The Public Health League of Washington notes in the *Messenger* that the cults have introduced bills in the present legislature which would provide a punishment of five years in prison for any one who gives or permits to be given any narcotic drug to any person under 21 years of age;

another bill would open up the hospitals of the state to chiropractors, sanipractors and other cults, and another would require physicians to write prescriptions in English and tell patients whenever there is a narcotic included.

GENERAL

Society News.—At the eleventh annual meeting of the Radiological Society of North America, Cleveland, December 7-11, Dr. Manly J. Sandborn, Appleton, Wis., was installed as president; Dr. Edward W. Rowe, Lincoln, Neb., made president-elect; Drs. Bertram C. Cushway, Chicago, Wesley H. Wallace, Brooklyn, and Raymond G. Taylor, Los Angeles, vice presidents, and Dr. Robert J. May, 5005 Euclid Avenue, Cleveland, secretary-treasurer.

Health Contest of Women's Clubs.—The General Federation of Women's Clubs is offering a prize to the state which shows the greatest percentage of clubs that participate in its program of health "surveys," by which the federation aims to secure a cooperative study by groups of the health laws and practices in communities. The federation is being aided in this work by the Metropolitan Life Insurance Company, the American Child Health Association and the American Public Health Association.

Resolution on Alcoholic Liquors.—The National Woman's Christian Temperance Union passed a resolution at the convention in Detroit in November to the effect that the best way to discourage the therapeutic use of alcohol and to relieve pharmacists of their present position of having to handle alcoholic liquors to fill prescriptions of physicians would be to make the sale and prescription of alcoholic beverages as medicine unlawful. The resolution commends the legislature of those states which have passed laws forbidding the sale and prescriptions of alcoholic beverages as medicine.

National Board of Medical Examiners.—There will be examinations held by the board in Parts I and II, February 10-12, in all Class A medical schools desirous of holding the examination and having a sufficient number of candidates, except in large cities, where they will be held in only one school. Candidates should notify the board's office, 1600 Walnut Street, Philadelphia, promptly; those not registered with the board sending formal applications not later than January 15. Examinations in Part III have been scheduled for Chicago in December; St. Louis, December 14-17, and New York City, Jan. 4-7, 1926.

Tax Reduction Bill Passes House.—With an amendment to reduce to the prewar rate the annual tax on physicians under the Harrison Narcotic Law, the federal tax reduction bill passed the House of Representatives, December 19. The amendment fixes the annual license fee of physicians under the narcotic law at one dollar instead of three, which has been the fee since the war period. The amendment was accepted unanimously in the House, and it is expected that the Senate will promptly accept it. Although the Secretary of the Treasury has never affirmatively approved of this tax reduction, it is known that the treasury department will not interpose objections to this amendment. The program of the administration leaders is to have the entire tax legislation disposed of in the Senate by March 1, 1926, so that the reductions will be effective March 15, when income tax returns must be filed. Since the House Ways and Means Committee held hearings on all the essential portions of the measure, the Senate Committee on Finance plans not to hold hearings on the tax bill, as such hearings would delay action. The reasons for the reduction of the narcotic tax on physicians were fully presented to the House Ways and Means Committee by Dr. Charles W. Richardson, Washington, D. C., and Dr. William C. Woodward, Chicago, both representing the American Medical Association. No objection to the adoption of the reduction has thus far appeared from any source.

New County Society Presidents.—The following physicians have recently been elected president of the county medical society indicated:

Dr. Alfred R. Autrey, Port Arthur, Texas, Jefferson County Medical Society.

Dr. Francis B. Blackmar, Columbus, Ga., Muscogee County Medical Society.

Dr. Edwin G. Bloor, Antigo, Wis., Langlade County Medical Society.

Dr. Robert K. Buford, Charleston, W. Va., Kanawha County Medical Society.

Dr. Ebenezer P. Clapper, Waynoka, Okla., Woods County Medical Society.

Dr. Lawrence G. Clayton, Central, S. C., Pickens County Medical Society (reelected).

Dr. William M. Gambrell, Belton, Texas, Belle County Medical Society.

Dr. Edward W. Gray, Sheffield, Ala., Colbert County Medical Society.

Dr. John F. Harrison, Mexico, Mo., Audrain County Medical Society.

Dr. O. Paul Humpstone, Brooklyn, Medical Society of the County of Kings.

Dr. Oren M. Kramer, Millersport, Ohio, Fairfield County Medical Society.

Dr. Bruce D. Lung, Kokomo, Ind., Howard County Medical Society.

Dr. William C. Moser, Morgantown, W. Va., Monongalia County Medical Society.

Dr. William J. B. Orr, Smithfield, N. C., Johnston County Medical Society.

Dr. William G. Pittman, Pine Bluff, Ark., Jefferson County Medical Society.

Dr. Theodore J. Redelings, Marinette, Wis., Marinette-Florence County Medical Society.

Dr. Charles I. Shaffer, Ralphton, Pa., Somerset County Medical Society.

Dr. Lawrence Shields, Xenia, Ohio, Greene County Medical Society.

Dr. Henry M. Stuckey, Sumter, S. C., Sumter County Medical Society.

Dr. Frederick J. Swift, Maquoketa, Iowa, Jackson County Medical Society.

Epidemiologic Report of League of Nations.—The November 15 issue of this report shows a marked increase of plague in August and September in certain regions of southern India, where the maximum incidence usually falls in October; plague was much more prevalent in the Bombay presidency than at the same time last year; from August 23 to September 19, there were 3,543 deaths from plague in the provinces of India. An increase in plague is also reported in Java and Siam, but in the principal ports of Asia, the plague situation was good during October; there were sporadic cases in September and October in Greece and in Egypt; there was an outbreak in June in Nigeria, which up to the middle of October amounted to 407 cases, with 301 deaths.——The cholera epidemic in Shanghai reported recently seems to have ended, only one new case being reported during the last two weeks in October. The outbreak in Manila which decreased in October had amounted to 199 cases and sixty-nine deaths at the time of this report. The severe epidemic in Kashmir had caused 11,400 deaths up to September 19, being exceeded only by the outbreak in September, 1919. The Punjab was infected from Kashmir (which is rare) and there were 2,600 deaths from cholera there up to September 19.——Yellow fever has been more prevalent on the Guinea coast than in 1924.——Typhus continued to decline in eastern and central Europe during the autumn, the incidence being the lowest since the World War; no cases were reported this year in Austria and only two in Germany; there were fifty-one cases and two deaths in Poland in the month ending October 3.——Malignant smallpox has been extremely rare in Europe except in Spain, no death having been reported since June in any other European country. Smallpox caused 3,572 deaths in Mexico in the first eight months of 1925, the greatest prevalence being in Central Mexico. Smallpox overran most of India during the first half of this year; an outbreak seems to occur here every fifth year.——There was an increase in mild influenza in October in England and Wales, with 196 deaths in the four weeks ending October 17 as against sixty in the preceding four weeks. British Guiana had an outbreak of 650 cases of influenza in the month ending August 8; the disease seems to be affected little by seasonal influences, an outbreak occurring about every nine months.——Scarlet fever is on the increase in central Europe and Great Britain; there is no indication, however, that the epidemic will be more extensive than those which occur every few years, the last one being in 1921.——The general mortality has been favorable in European and North American cities, and is the lowest on record in German cities, and markedly improved in other parts of central Europe. Mortality, which in the last century was often excessive during the summer, is now usually the lowest at that time except in subtropical countries. Modern sanitation has been less successful in dealing with winter excess mortality, which is caused largely by influenza and other respiratory diseases.

FOREIGN

Personal.—Dr. William E. Gye has been awarded the annual fellowship established by London University for the graduate who has done most for the advancement of medicine in the last five years.

Campaigns Against Quacks in Japan.—The *Japan Medical World* states that the metropolitan police of Tokyo are now enumerating all quack doctors in that community, preparatory to launching a campaign to enforce the law against them. While investigations in October revealed only eighty-eight quacks practicing without a proper license, current reports place the number at several hundred. The law exacts only a fine of 500 yen for practicing without a license, which the quacks are said to be able to pay without much inconvenience.

Professor of Physiology at Cambridge Appointed.—Dr. Joseph Barcroft was appointed professor of physiology of Cambridge University in England, December 16. Professor Barcroft was president of the physiologic section of the British Association in 1920; was awarded the Royal Medal in 1922 and the Baly medal in 1923; he was the Oliver-Sharpey lecturer, Royal College of Physicians, in 1915; the Lowell lecturer in 1922; lecturer in Kings College, Cambridge, and reader in physiology in Cambridge; Fullerian professor of physiology at the Royal institution, and editor of the sixth edition of Huxley's Physiology.

Infant Mortality in Bombay.—In his last annual report, the health officer of Bombay showed that the infant mortality in that city in 1924 was 419 per thousand births, although, if the rate is calculated on the deaths of infants born in Bombay, it is reduced to 275, as 3,159 of the deaths were of infants born elsewhere. "This excessive emigration of the infants is due," says the *Medical Officer,* "to a custom among native women of going to the country for confinement. The chief causes of death were diseases of the respiratory system, debility and premature births, convulsions, diarrhea, smallpox and febrile diseases; other adverse factors were poverty, ignorance, malaria, and the practice of soothing babies by the administration of opium."

Death of Sir Richard Powell.—Sir Richard Douglas Powell, one of the king's physicians, died in London, December 15, aged 83. Dr. Powell became physician in ordinary to Queen Victoria in 1889, to King Edward in 1907, and to King George in 1910. He was emeritus lecturer on medicine in Middlesex Hospital, consulting physician to Brompton and Ventnor hospitals, and former president of the Royal College of Physicians; he delivered the Harveian oration in 1914 on "Advances in Knowledge Regarding the Circulation and Attributes of the Blood Since Harvey's Time"; was the author of "Diseases of the Lungs and Heart" and other publications, and had been a Knight of Grace of the Order of St. John of Jerusalem since 1898.

Government Services

Annual Report of Public Health Service

In the annual report of the U. S. Public Health Service submitted to Congress, Surgeon General Cumming states that preliminary figures indicate a death rate for the country in 1924 of about 11.9 per 1,000, as compared to 12.4 in 1923; with 17.6 in 1900 and with 19.8 in 1880. Heart disease ranks first in the United States as the cause of death and its incidence is steadily increasing. Influenza and pneumonia combined occupy third place. Infant mortality has shown an appreciable decrease, but the number of deaths of mothers incident to childbirth has shown little change in the last nine years for which data are available. From 1915 to 1922 inclusive, it is estimated that for every 100,000 babies born, the lives of from 600 to 900 mothers were sacrificed; about one-third of these deaths were caused by infection of the mother at childbirth. The diphtheria death rate shows a fall from 43.3 per 100,000 in 1900 to 12.1 in 1923. "If parents could be induced to protect their children by the use of the 'toxin-antitoxin' process of immunization," says Surgeon General Cumming, "there is no reason why diphtheria might not be still further greatly reduced or even exterminated." The death rate from tuberculosis in the registration area dropped from 201.9 per 100,000 in 1900 to 93.6 in 1923. Reports from thirty-five states having a population of nearly eighty-eight and one-half millions give a death rate of 88.6 for the calendar year 1924.

Reports from thirty-five states for the calendar year 1924 showed an increase of 75 per cent in the number of cases of smallpox and 628 per cent in the number of deaths as compared with the year 1923. The smallpox case-rate in the United States is at present, according to reports received, the highest of any civilized country in the world. It may be said, however, that much of the disease is of a mild type and in some countries many of these cases would be classed as "alastrim." It is also believed that smallpox is better reported in the United States than in most other countries. Eleven cases of tetanus, most of them fatal, occurred in the United States during the year as a result of the use of bunion pads as vaccination dressings. Efforts are being made to induce physicians to follow a standard technic when vaccinating, and warnings were issued against the use of shields and bunion pads as dressings.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 5, 1925.

Preservatives in Food

Mr. Neville Chamberlain, minister of health, speaking at a luncheon of the provision trade section of the London Chamber of Commerce, said that he recognized that the new regulations regarding the use of preservatives in food (The Journal, September 26, p. 988) might involve inconveniences, even some hardship, to individual members of the community, but the very last thing the government desired was to interfere with trade or industry. The crux of the controversy that had arisen was the plea for the removal of the prohibition of boron compounds. He would explain the considerations which had weighed with him in this matter. It was known that these boron compounds were poisonous, that they readily passed into the blood stream and were not excreted so quickly as they were absorbed, and they therefore had a cumulative effect. During the past forty years their use had been increasing, and there had been an increase in the prevalence of certain digestive diseases, such as appendicitis and dyspepsia. The retort might be that it could not be proved that these evils were due to boric acid; he could not prove it, nor could the traders prove that they were not. Before the cancellation of the prohibition could be urged, it was necessary to prove that this form of preservation was necessary, for if it was not necessary there was no point in the demand for further inquiry as to the effects of boron compounds. The trade had also to take into account that in certain countries the use of these preservatives was absolutely forbidden, except in a certain limited number of foods; and in all cases, although their use might be general, there were certain firms that had succeeded in doing without them. The case for prohibition was therefore unanswerable. There was considerable time to make the necessary adjustments and to consult with the transport companies and shippers.

Arsenic in American Apples

Shopkeepers in a London district were summoned for selling apples found to contain arsenic, in one case to the amount of one-fifth grain (0.13 gm.) to the pound (453 gm.). Owing to a case of illness reported to the local health authority as due to eating apples, samples were taken. Five of the samples of Jonathan apples imported from America were found to contain arsenic; in each case, more than a hundreth of a grain to the pound. Samples of English apples, taken in the district, were free from arsenic. It was pointed out that fruit growers in all parts of the world made a practice of spraying trees for the purpose of combating insect pests and that in America not only the blossom but also the fruit was sprayed on the tree. For the defense it was stated that in America the presence of the dreaded fruit tree pest known as the codling moth made it necessary to spray fruit trees with arsenic. The season had been unduly dry, with the result that the arsenic had not been washed off. Although the shopkeepers could not be expected to know anything about the arsenic they were, according to the law, fined in each case to the extent of $13, with $5 costs.

The Prevention of Venereal Diseases

Sir Arthur Newsholme, who for many years was principal medical officer to the ministry of health, delivered a lecture for the British Social Hygiene Council on "The Community and Social Hygiene." He was convinced that the control of venereal diseases should become a question of organizing public opinion and action against irregular sex relations.

For practical purposes these were solely responsible for such diseases. He regarded the general advocacy of prophylaxis in irregular sex relations as inimical to moral progress, by means of which, in conjunction with extended medical measures, we should render venereal diseases a shadow of their present self. In recent years, and particularly in the last decade, notwithstanding the terrible sexual lapses due to the Great War, the hope of controlling venereal diseases had become increasingly bright. Much good could result from the greater frankness with which sexual problems were discussed. He regarded public propaganda on preparations for prophylaxis in irregular sex relations as a sort of partnership in the projected immorality and as an encouragement of promiscuity In many departments of life there had been vast improvements in our sense of social responsibility. In sexual morality there was indubitable proof of improvement. One of the problems was to ascertain how an act, which even now was regarded as venial in a man and infamous in a woman, could by force of public opinion be made equally infamous for the two sexes. Facilities should be given to teachers to attend special courses of lectures on social hygiene and ethics, and conferences should be held between teachers and parents Biology, psychology and hygiene should be taught in all secondary schools. Sexual hygiene should take its place with other branches of public health education directed toward self-control as affecting health

Illicit Traffic in Narcotics

The extent of illicit traffic in narcotics, such as opium, morphin and cocain, is revealed in a report issued by the advisory committee on traffic in opium of the League of Nations More than 1,100 seizures of contrabrand drugs have been reported to the league during the last four years In the majority of cases seizures were made on board ships, where drugs are concealed in the most unsuspected and out of the way places, as, for instance, the lamps of the bridge compass, the water tank under the boilers, in barrels of smoked fish, casks of phenol (carbolic acid), tea chests with false bottoms, the cylinders of a life raft, under coils of rope in the wheel room, or in the soles of the shoes of the accused. In other cases the drug has been shipped as phonograph records or electric bulbs, or described as "salted pickles" or cocoa powder. Two large consignments of drugs were concealed in iron safes and iron beadsteads, respectively. The methods of concealment are most ingenious and involve considerable expense. Heroin in bedsteads seized at Hongkong was packed in tin tubes, specially made to fit the hollow legs of the bedsteads. Below the tubes, plugs had been soldered into the hollow legs, and below these the casters were screwed on.

MADRID

(From Our Regular Correspondent)

Nov. 12, 1925.

Medical Reciprocity with Foreign Countries

The army directory has issued a decree providing for reciprocity with foreign countries as regards the practice of the several professions, including medicine. Heretofore, it has seemed strange that this country should grant all kinds of facilities to foreigners, while Spanish physicians find so many handicaps when trying to practice abroad. The situation was the worst in precisely those nations in which large numbers of Spaniards make their homes. In fact, medical practice was practically prohibited to Spaniards, except in the rare cases in which physicians had studied there from grammar school on. Thus, in neighboring France, Spanish physicians can be counted on the fingers of both hands, and those few are the sons of emigrants or persons who have spent their entire lives there. Nationalist sentiment has been so aroused that a number of Spaniards, urged to settle in France during the World War, were compelled to leave the country afterward; forbidden to practice, in peace times, the very profession which they had been called over to aid in.

The present reciprocity measure had been demanded on several occasions by medical societies in the provinces bordering on France, as they have been the ones suffering most from the influx of foreign physicians. The government has now complied with their wishes, but has recognized the rights of those physicians settled in Spain before official publication of the new provisions.

A proof of the indifference shown by physicians even to their most vital problems is found in the scarcity of comment on such a far-reaching question. Only two articles have discussed the matter. In one, Dr. Cortezo, the editor of *El Siglo Médico* and president of the council of state, pointed out the possible danger of a rush of foreign physicians. Germany and Austria may now accept reciprocity, as their universities keep on training physicians while the loss of territory has decreased the available fields. Thus the German Reich could send 100 graduates to Spain for each Spanish physician going to practice in Germany.

In the other paper on the same subject, Dr. A. Fernández de Velasco regrets the lack of reciprocity agreements with Latin American republics. This point seems to have been overlooked in the recent decree. Among Latin American countries, only Bolivia, Colombia, Costa Rica, Honduras, Nicaragua, Peru and Salvador have so far signed such treaties. Panama is now considering the matter. The most important republics, such as Argentina, Chile, Cuba and Mexico, not to mention Ecuador, Guatemala, Paraguay, Santo Domingo, Uruguay and Venezuela, have taken no action on this matter. Reciprocity treaties prove influential in promoting university relations, as shown by the fact that the two countries having most students in Spain are Colombia and Peru, both of which enjoy reciprocity rights, while hardly any students come from the others. In Paris, there are nearly 7,000 Latin American students, and 20,000 Latin American families have trailed them there, spending millions of francs each year. In Spain, there are barely 200 Latin American students. Argentina shirks reciprocity on the ground that it has already an overflow of graduates. In a single Argentine medical school, that at Buenos Aires, the enrolment reaches 5,000. Cuba also declines reciprocity, alleging that if this privilege is extended to Spain, France and Italy will expect a similar courtesy. Porto Rico and the Philippines are out of the question, because of American control.

Pediatric Congress

The Spanish Congress of Pediatrics met with great success. A welcome departure was the active participation, in a medical meeting, of noted representatives of other professions, such as lawyers, judges, teachers and priests.

One of the most interesting papers was by Dr. González Alvarez on child welfare. He protested against the undue emphasis laid on the care of illegitimate children rather than of children in general. González Alvarez pleaded for compulsory breast feeding, a conclusion accepted by the congress only so far as it applied to mothers in lying-in hospitals. His other resolution, forbidding outside nursing by mothers who did not nurse their offspring, received endorsement. González Alvarez drew a somber picture of present Madrid employment agencies for nurses. These agencies are usually boarding houses. The rooms are small and overcrowded. Feeding utensils are promiscuously used. In order to keep the milk flow of unemployed wetnurses, two or three overgrown indigent infants are used. These children usually have rickets or scrofula, if not syphilis. If there are no children on hand, the other women replace them. In one recent case, the nursed baby acquired itch from one of these nurses. *In another* nurse, skin and mucous signs of syphilis were detected during her first month's employment. After dismissal, such nurses return to the employment agency to continue spreading disease, as no medical examination is enforced, and the provision requiring nurses to have health cards has long been neglected. In order to remedy such deficiencies, González Alvarez suggested the passage of a law, but with "teeth" in it, so that child health should really be protected.

Dr. Bandelac de Pariente of Paris stressed the advantages offered to young and visiting physicians in France by Umfia, the Franco-Iberic-Latin-American society.

The one mishap attached to the congress was the sickness, contracted during the meeting, of the surgeon Arquellada, who died a few days after his return to Madrid. Although still young, Dr. Arquellada, surgeon at the Niño Jesús (Children's) Hospital of Madrid, had made a name for himself through the introduction of several surgical methods. These he described in the child surgery congress held recently in Paris.

Farewell to a Clinical Professor

The Madrid Medical School witnessed recently an almost unprecedented scene, when Dr. A. Redondo, the professor of pathology and clinical medicine, reached the retirement age. His last lecture was attended by former pupils from all over the country, some of them now occupying high positions. Dr. Redondo was satisfied to be just a professor. He never tried to go into politics or to devote his talents to social problems. His only acquaintances were among his pupils, who now have shown the love and respect they feel toward their old preceptor. When the lecture was over, the whole audience surrounded the professor and went with him as far as the door of the school.

Fifty Years of Professional Life

For fifty years, Dr. S. Cardenal of Barcelona has practiced medicine and surgery. The authorities and scientific societies of his home town thought the occasion had come to show their recognition of such a useful career, which included the introduction of antisepsis in Spain. For the first time in the history of the city, such honors have been rendered to a physician. Dr. Cardenal's name was given to the hospital clinic where most of his surgical work has been done, and a number of meetings were held, with no end of laudatory speeches. Fortunately, Dr. Cardenal was strong enough to bear up with so much enthusiasm. As a practical way of showing his gratitude, he has endowed a fellowship, which will permit some meritorious young man to become a physician.

Aid to Physicians

Dr. Murillo, director general of public health, has issued an order that will secure indigent physicians free admission to the private ward at any government hospital. Heretofore, impecunious physicians in need of medical treatment had often been unable to secure admission to hospitals, as all free beds available were occupied.

First Spanish Medical Salon

A Madrid paper, *Vida Médica*, had the original idea of holding an exhibition of art works by physicians. A prerequisite was that the subject should not be medical. There were more than 300 entries, including paintings, sculptures, architectonic plans and even literary works and musical compositions. The exhibition was held in the rooms of the Society of Friends of Art, one of the most elegant and aristocratic places in town.

The king personally inaugurated the show, being accompanied by the whole army directory and the diplomatic corps. He proved himself a good critic in passing judgment on the exhibition. "I thought this exhibition would be rather humorous, but I see here a number of interesting works." The satirical writer A. Azpeitia has given expression to the alleged displeasure of patients at seeing physicians thus go into strange fields. "Physicians neglect their profession and devote themselves to dilettantism while we suffer. Physicians may go in for all kinds of amusements, provided they keep it quiet. Patients are naturally selfish and want to monopolize their physicians' attention. They do not want even to share it with other fellow sufferers."

On the other hand, Dr. Alvarez Sierra said: "There is no profession or class having so many receptive elements for esthetic emotion as physicians. . . . Every physician carries within him an artist's soul. Such artistic manifestations are safety valves offering an outlet to the nervous tension of those constantly walking in the footsteps of death." Dr. Juarros endorsed this view: "Pain, among its many qualities, has the power to take off all social masks. That spectacle of human zoological realism would embitter life, were it not for a romantic reaction on the part of the physician."

There is little doubt that this first attempt proved quite meritorious and compared favorably with other art exhibitions both here and abroad. If physicians now expressing their originality in lay fields ever devote a similar effort to their own profession, their success will prove astounding.

BELGIUM

(From Our Regular Correspondent)

Nov. 18, 1925.

Cerebrospinal Meningitis

From his experience in the army of occupation, Dr. Muschang points out some facts concerning symptomatology of cerebrospinal meningitis. In addition to the outstanding symptoms, there are irregularity of the pulse, herpes labialis and petechial purpuric eruptions. In infants, abnormal tension of the fontanels is of high diagnostic value. Ocular signs, rapid coagulation of the cerebrospinal fluid and xanthochromia are of great importance. From the therapeutic standpoint, he recommends: (1) injection of serum into the vertebral canal; (2) prompt action; (3) large doses: withdrawal of 50 c.c. of cerebrospinal fluid, injection of 40 c.c. of serum, this dose to be repeated systematically for four days and combined with 40 c.c. of serum intramuscularly, and (4) specificity in the serotherapy: polyvalent serum, and, as soon as the laboratory has identified the causative meningococcus, injection of anti-A, anti-B or anti-C serum.

Free Tours to the Congo for Young Physicians

The *Bruxelles médical*, aided by a transportation company, has for some time been providing an opportunity for a number of young physicians and senior medical students to visit the Congo region. The young men selected are given a free passage in return for assisting the ship's physician.

Tartar Gingivitis in Relation to Cancer

Before the Société belge d'otorhinolaryngologie, Dr. Heyninx recently spoke on the concomitance of cancer of the respiratory and digestive tracts with alveolodental pyorrhea and gingivitis. There may be a relation of cause and effect between the two affections. Also, cancer of the tonsil may be secondary to a primary gum affection or the like. If the gum affection were of microbic origin, it might produce chronic irritation and result in hyperplasia of the mucosa which covers the tonsil. If neoplastic in origin, it would produce metastasis in the tonsil. Infected saliva might carry the virus into the throat and esophagus.

Resuscitation of the Heart

Dr. Schepens, in addressing the Société de médecine of Ghent, submitted a study of forty-three cases of reanimation of the heart by injection of epinephrin, twenty-three of which were successful. He concludes that this should become a routine method and that the surgeon should always have the necessary material at hand. Dr. Schepens gives, as conditions of success, not to lose precious time; to begin with a small dose (from 0.25 to 0.50 mg.), and not to interrupt artificial respiration.

Surgery of Ureteral Calculus

At the annual session of the Société d'urologie, several authors reported cases in which ureteral calculi had been removed by the extraperitoneal route. François and Tant reported several cases in which low position of the calculus makes possible the paraperitoneal route. The location of the calculus is determined by means of roentgenography and the opaque ureteral sound. Van den Branden referred to the vaginal route for the extraction of calculi.

Spina Bifida and Incontinence of Urine

Addressing the Société belge d'urologie, Dr. François pointed out the significance of spina bifida as a cause of incontinence of urine. Patients with incontinence of urine should be subjected to a roentgenologic examination with a view to detecting spina bifida of the fifth lumbar and first sacral vertebrae and metamerization of the sacral vertebrae. The discovery of malformation should be followed by epidural injection of iodipin through the sacrococcygeal hiatus or between the arches of the first lumbar vertebrae. It should then be determined whether or not the iodipin comes to rest near the site of the malformation.

In case of spina bifida and metamerization, with arrest of the iodipin at the level of the malformation, if the iodipin does not effect a great improvement, laminectomy of the sacral vertebrae and of the fifth lumbar vertebra, together with removal of abnormal processes (yellow ligament, fibrous adhesions, lipoma) that compress the dural culdesac may be considered if the patient is an adult. If the patient is a child, however, surgery should not be undertaken lightly—in any event, all other forms of treatment should be tried first.

The Problem of Heredity

In connection with the reopening ceremonies of the University of Brussels, Dr. Brachet, rector of the university, delivered an address on the present and future aspects of the problem of heredity. Numerous species of animals have become extinct. Evidences of previously unknown species are being discovered every day. Scientists have been able to classify animals and plants in accordance with a probable order of filiation. Some hold that reconstruction of the history of animals is possible. To be sure, methods now available for the construction of an historical biology are open to suspicion or nearly exhausted. It is the present living being that must be the object of research.

A Cruise in the Levant

The *Bruxelles médical* organized, some time ago, a successful Mediterranean tour. The Brussels journal is planning a second Mediterranean tour for the early spring. This voyage will take on an international character. The cost of the trip for physicians will be about 4,000 francs ($160).

Dr. Louis Coty and the Museum of Public Health

In the cemetery at Jemappes, a monument has recently been erected over the grave of Dr. Louis Coty, who was an active pioneer in public health work. Nearly twenty years ago Coty established the dispensary for ancylostomiasis, which has aided in eradicating that terrible disease, and the Museum of Hygiene at Mons, an organization for the education of the people. Museums usually contain monotonous exhibits which fail to attract the passer-by. The museum of Mons, however, essays to give practical instruction in problems affecting dwellings, foods and education. Numerous samples and some very significant pictures indicate the respective nutritive values of the essential food products.

The Society of Legal Medicine

At the reopening session of the Société de médecine légale of Belgium, the newly elected president, Professor Heger-Gilbert, took up the problem of stabilization of functions of medicolegal experts in courts, together with revision of fee schedules applicable to such experts. Suggestions for the modification of the present schedule were addressed to the Commission des frais de justice répressive.

BUCHAREST

(From Our Regular Correspondent)

Nov. 18, 1925.

Infant Feeding

In speaking before the Medical Society of Oradea Mare on infant feeding by means other than its mother's milk, Dr. Bálint distinguished between what he calls "substitute" and "artificial" feeding. The former he regards as feeding with milk from another woman or after modification from some other animal; the latter he defined as feeding with preparations artificially manufactured from milk or from other products. He gave an account of the laboratory methods of modifying milk in accordance with physicians' prescriptions. Artificial feeding is condemned by Bálint, and the majority of foods on the market are strongly decried. The great evil of them all is the ease with which they can be used. They are readily digested, but this is largely because they contain so small an amount of food material. Disorders arising from imperfect feeding escape for a long time the notice of the parent. Such children are pallid, flabby and listless, and lack resistance against disease. The market is flooded with infants' foods, all more or less likely to produce rickets and other nutritional diseases, and their banishment from nurseries would greatly aid the development of the race.

Hygienic Dwellings for Working Men

Hygienic dwellings for working men and chiefly for agricultural laborers in Roumania have been provided since 1919 by means of government grants, a sum having been included for that purpose in each year's budget. The annual expenditure from 1919 to 1924 amounted to $15,000, but the demand for cottages grew until this year the annual grant was increased to $24,000. As it is certain that this amount also will prove inadequate, an act will be passed that will authorize the conversion of $24,000 capital into interest, thus making it possible to build about 1,000 cottages yearly. Another clause of the same act provides that in the case of land being sold by the local authorities to laborers for building purposes, all the necessary plans, surveys and contracts are to be made by the minister of agriculture at state expense. The interests of the laboring classes are safeguarded by the act in a variety of other ways. For instance, land selected for building purposes must be suitable as regards soil, air and drinking water; and speculation by the builder or contractor is forbidden. Conditions of the sale or loan, terms of the loan and the general plan must be favorable to the laborer. During the period allowed for repayment, the property cannot be seized for debt, divided, encumbered or alienated in any way; exemption from taxation is granted for fifteen years. Preference is given in selection of sites to applications coming from localities which make a free grant of land either for house or for gardens. Materials are forwarded at cost price on government railways, but state assistance is granted only for buildings designed to accommodate one family. Each cottage occupies a plot of from 1,000 to 1,200 square yards, and the cost of building varies from $200 to $350. Loans may be repaid in annual instalments, extending over twenty or twenty-five years. Under the act of 1920, 7,500 workmen's cottages were built in one year. Another result of this act has been to abolish land speculation, and to keep down the cost of building sites. Owing to the fact that most Roumanian parishes own the adjacent country, which formerly was used as common land to supply fuel and pasturage, this land is now convenient for the erection of workmen's dwellings.

But the care of the state is not confined only to the housing of agricultural laborers. A law has been passed which authorizes the construction of houses in the larger cities for employees of both state and private enterprises, the government undertaking the building of the houses, setting aside a sum for that purpose. Actual construction will begin in 1926. The average building cost of a two-room flat is $640; the average yearly rental amounts to $50. A flat of three rooms and kitchen costs from $950 to $1,000, and may be rented for $60 a year.

Psychoses Associated with Migraine

At the Medical Society of Cluj, Dr. Jacobi read a paper on psychoses associated with migraine. He said that simple hemicrania sometimes develops mental irritation, depression, anger or slight hallucinations. With migraine of an epileptic type a visual aura can precede an attack. The true epileptic nature of migraine is noted when the visual aura becomes red. Abortive attacks, psychic symptoms or a psychic equivalent can occur. A transitory psychosis sometimes follows or accompanies migraine. This is important as indicating the necessity of antiepileptic treatment for migraine. Dr. Jacobi notes close clinical relationship between migraine and hysteria major. Several types of cases are on record; among them: (1) a combination of hallucinations of sight, confusion, amnesia or ataxia or aphasia, with attacks of migraine lasting six hours; (2) confusion, with religious delirium; (3) hemicrania, with temporary blindness, paresthesia and a speech disturbance, and (4) hemicrania after mental shock, with anxious delirium and disturbance of consciousness for three days. The occurrence of these psychoses is rare.

Detection of Yeast Extract as an Adulterant of Meat Extract

The *Revista Farmaciei*, a pharmaceutic journal, publishes a method by which one is enabled to detect as little as 1 per cent. adulteration of meat extract with yeast extract. This may act as an efficient check to dealers working off stocks of yeast extract as genuine meat extract. Such stocks are known to have been hurriedly withdrawn from the market since the test was published. If the sample gives a doubtful or negative result by that test, but is still open to suspicion, one may take from 3 to 6 gm. and dissolve it in 3 or 6 c.c. of water, according to the quantity taken; to this one may add sufficient spirit—methylated will answer the purpose—to throw down all that is insoluble in alcohol. After a vigorous shaking, one may separate the insoluble residue by decanting or filtering, dissolve this residue in 60 c.c. of water, filtered if necessary, and proceed as before. If the yeast extract is present, the characteristic bluish-white precipitate will be thrown down, on boiling with the modified Fehling's solution; this may be collected and weighed.

Government Attack on "Patent Medicines"

The postoffice department of Roumania has decided to establish a censorship over newspapers in an endeavor to prevent publication of offensive or fraudulent advertising. Newspapers printing such advertisements will be barred from the post. The advertisements aimed at are chiefly those of the lowest class of "patent medicines," about fifteen of which are at present being examined by the chemical laboratory of the ministry of sanitation to see whether they correspond with the claims made. This censorship has been in existence in Austria for some time, and has long been advocated in the medical journals as a public necessity.

VIENNA

(From Our Regular Correspondent)

Nov. 17, 1925.

Observations on Brain Abscesses

Dr. Winckelbauer recently addressed the Vienna Gesellschaft der Aerzte on the brain abscesses observed by Dr. Brunner and himself at the Eiselsberg clinic. He emphasized the frequency of recurrences and the consequent gravity of the prognosis. Frontal brain abscesses are adjacent to the accessory sinuses of the nose. Injuries of the frontal region are accordingly dangerous, as was observed in two cases that ended fatally in spite of repeated operations. In both cases pus had been retained but was not discovered at the repeated operations. Such abscesses should be drained at the lowest point, so that pus retention may be prevented as far as possible. An abscess sometimes takes as much as five weeks to develop, while in other cases it is manifest on the third or fourth day. In the discussion that followed the address, Dr. Jerusalem stressed the need of early diagnosis and early operation, as was shown by the experiences of the war. Otogenous abscesses, particularly those of the frontal and temporal lobes, as discussed by Alexander, are more favorable than abscesses of the cerebellum. The mortality from operations in frontal abscesses and those of the temporal lobe ranges from 40 to 50 per cent., while in cerebellar abscesses it runs as high as 90 per cent. Abscesses of the temporal lobe are drained from the middle ear, the lowest point; but cerebellar abscesses can be operated on only from the side. Otologists also extol drainage from the lowest point. Beck held that the variety of pyogenic agent is important in the prognosis. It is his experience that fetid, green, crummy pus offers a more grave prognosis than pus mixed with mucus. In the latter case a pyogenic membrane is present, so that the abscess can be better controlled.

The Seventieth Birthday of Professor Dimmer

The medical department of the University of Vienna celebrated, a few days ago, the seventieth birthday of Prof. Dr. Dimmer, an authority in ophthalmology. He studied under Nolte and Jäger, and served as an assistant under Fuchs. In 1885, he was called to a chair in Innsbruck; in 1900 he removed to Graz, and in 1910 he became Schnabel's successor in Vienna, where he took over the management of the First Eye Clinic. In 1918 Professor Fuchs retired and Dimmer succeeded him, while Meller assumed Dimmer's previous position. Dimmer's principal activity in ophthalmology has had to do with the normal and the diseased fundus, and, more particularly, with the histologic interpretation of many conditions not explainable solely with the ophthalmoscope. His researches have been on the detailed structure of the macula, its reflexes and the reflexes of the fundus as a whole. In the controversy with Gullstrand over the color of the macula, he appears to have been victorious. Photography of the fundus was first developed by Dimmer; his apparatus gives good service. His most important publication is "Der Augenspiegel," which is a complete treatise on modern ophthalmology. As a teacher, he stresses exact correction of the eyes, and his lectures are a model of exactness; likewise his operations betray almost pedantic exactness. As Professor Dimmer himself—possibly by reason of excessive modesty—resisted all urgings to participate in the festivities, his natal day was celebrated in his absence, by his many friends, admirers and colleagues.

Accidents Due to Electricity and Treatment in Electric Shock Simulating Death

In a lecture forming a part of the Vienna "Seminar-Abende" for general practitioners, Professor Jellinek discussed recently the etiology, pathology and treatment of accidents due to electricity. He attaches great importance to insulation of electrical household utensils, as, through short circuits, accidents may easily arise even with a low voltage (from 110 to 220 volts). Lamps, flatirons, cooking utensils, and, more recently, radio apparatus have been the cause of such accidents. Injuries actually due to electricity are not true burns; only an arc light can produce burns. Wounds due to electricity are generally grayish white, circular and firm, without a trace of reactive inflammation in the adjoining area. The hairs next the wound are not even singed, and, if the patient survives, the wounds are not in the least painful. There is not always a continuous lesion and almost never a severe or suppurating infiltration of the surrounding area—not even in injuries of the bones and joints. After a latent stage possibly of several weeks, an aseptic necrosis sets in, without any general manifestations, even though there has been extensive loss of substance or so-called spontaneous amputation. If such injuries are treated conservatively, the prognosis is very good. Surgery is contraindicated for two reasons: (1) during the first few days or even weeks, it is impossible to determine the extent to which degeneration of the tissues may occur; (2) the vessel wells, even at some distance from the electrical injury, sometimes are very vulnerable, so that severe hemorrhages may be induced. Scar tissue after such accidents is soft, is vascular and never shrinks, and is thus very favorably constituted. The strength and character of the current are not the sole factors in determining the intensity of the injury. The range of individual susceptibility is great; it varies in the same individuals on different occasions. What is termed "death from electricity" is, as the Vienna school has shown, in reality only apparent death. Necropsy reveals only agonal phenomena, such as edema of the brain or lungs and extravasations, but no explanation for the fatal outcome is found. Jellinek thinks that disturbance of function of the vital organs causes death. Support for this belief is found in the fact that persons who survive electrical accidents never show evidence of loss of organs even when they have lain like dead for hours. If the patient recovers, his restoration is rapid, once it begins. The sovereign remedy is artificial respiration, but this remedy must be applied as soon as possible after the accident and may need to be continued for many hours. Until death spots appear, there is still hope, even though the current was very heavy. All this is true likewise of injuries from lightning. Cases are recorded in which the first attempts at resuscitation were begun a full hour after the patient was struck by lightning, while another hour passed before the efforts were successful.

Trachoma, Anthrax and Typhoid in Austria

During the last few weeks, there have been three epidemic outbreaks of infectious diseases in the immediate vicinity of Vienna. The recent outbreak of typhoid in Neunkirchen has involved thus far ninety-two cases and has resulted in five deaths. The source of the infection was the milk from a small dairy. Two carriers came in contact with the milk. The outbreak of trachoma occurred in a factory near Vienna, in which not only native workmen but others from Slavic territory were employed. About twenty patients were hospitalized, and the factory was closed; this ended the outbreak. The epidemic of anthrax, to be sure, comprised only seven cases, but the infection had been carried into several districts. The infection started in a brush factory, and the unusual character of the disease gave rise to a certain degree of laxity, but the authorities soon got things in hand.

Marriages

Walter Peters Gardiner to Miss Catharine Marion Sullivan, both of New Orleans, December 2.

Russell Ethelbert Palmer to Miss Suzanne Brisbois, both of St. James, Mich., in November.

George Elisha May, Boston, to Miss Winifred Arnold of Wyoming, N. Y., September 24.

Stephen Jay Spitzer, New York, to Miss Elizabeth Noyes of Oakland, Calif., December 9.

Deaths

Henry Redwood Wharton ⊕ Berwyn, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1876; member of the American Surgical Association; formerly clinical professor of surgery at the Woman's Medical College of Pennsylvania, Philadelphia; at one time on the staffs of the Presbyterian, Children's and Bryn Mawr (Pa.) hospitals; author of "Textbook on Minor Surgery and Bandaging"; aged 72; died, December 3.

George French Little ⊕ Brooklyn; Medical Department of Columbia College, New York, 1895; member of the American College of Physicians; formerly assistant clinical professor of pediatrics, Long Island College Hospital; at one time on the staff of the Kings County Hospital; aged 60; died, December 5, at the Methodist Episcopal Hospital.

William Eck Doran ⊕ Colon, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1904; formerly president of the board of education; served in the M. C., U. S. Army, during the World War; aged 46; died, December 6, at the Sturgis (Mich.) Memorial Hospital, of erysipelas.

Henry Tierney Bray, New Britain, Conn.; University of Vermont College of Medicine, Burlington, 1902; member of the Connecticut State Medical Society; chairman of the board of health; on the staff of the New Britain Hospital; aged 46; died, December 7, following an appendectomy.

Lewis Cass Taylor ⊕ Springfield, Ill.; Bellevue Hospital Medical College, New York, 1875; past president of the Illinois State Medical Society; secretary, state department of registration and education; formerly member of the state board of health; aged 71; died, December 14.

Walter Gohring Ryon ⊕ Poughkeepsie, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1896; member of the American Psychiatric Association; superintendent of the Hudson River State Hospital since 1917; aged 51; died, December 4.

Albert E. Acker, Jacksonville, Fla.; Georgetown University School of Medicine, Washington, D. C., 1907; member of the Florida Medical Association; served in the M. C., U. S. Army, during the World War; aged 61; died, November 25, following a long illness.

Lavine Alonson Bromley, Granville, N. Y.; University of Vermont College of Medicine, Burlington, 1882; member of the Medical Society of the State of New York; aged 68; died, December 2, at the Glens Falls (N. Y.) Hospital, of heart disease.

Amos H. Horn, Putnamville, Ind.; University of Virginia Department of Medicine, Charlottesville, 1883; member of the Indiana State Medical Association; aged 68; died, December 6, at the Putnam County Hospital, Newcastle, of pneumonia.

John Rogers Parry, Jr., Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1911; served in the M. C., U. S. Army, during the World War; aged 35; died recently, at the Misericordia Hospital, of pericarditis.

A. A. Smith, Hawkinsville, Ga.; Savannah Medical College, 1875; past president of the Medical Association of Georgia; for eight years member of the state board of medical examiners; Civil War veteran; aged 78; died, November 26.

Howard Eugene White, Logan, Ohio; College of Physicians and Surgeons, Chicago, 1888; for eight years postmaster of Fairmont, Ill.; formerly bank president; aged 61; died, December 1, of pernicious anemia.

Henry M. Moulton ⊕ Cumberland Center, Maine; Dartmouth Medical School, Hanover, 1889; Medical School of Maine, Portland, 1889; formerly member of the state legislature; aged 61; died, November 22.

Charles E. Rogers, Gray Court, S. C.; University of Tennessee College of Medicine, Memphis, 1886; member of the South Carolina Medical Association; aged 67; died, December 3, of cerebral hemorrhage.

Charles Harrison Lee, Fayette, Mo.; Barnes Medical College, St. Louis, 1893; member of the Missouri State Medical Association; aged 52; died, November 28, at St. Joseph's Hospital, Kansas City.

Michael Joseph Burke, New York; Medical Department of the University of the City of New York, 1875; member of the Medical Society of the State of New York; aged 75; died, November 27.

Percy Eugene Riley ⊕ Eau Claire, Wis.; University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1903; aged 49; died, December 2, of cerebral hemorrhage.

Clarence L. Mershon ⊕ Fairhope, Ala.; Drake University College of Medicine, Des Moines, 1898; past president of the Baldwin County Medical Society; aged 54; died, November 26.

John Alexander Cox, Donaldson, Ark.; Memphis Hospital Medical College, 1889; member of the Arkansas Medical Society; aged 53; died, November 29, at a hospital in Little Rock.

George W. Schwartz, Summer Hill, Ill.; St. Louis Medical College, 1873; member of the Illinois State Medical Society; aged 78; died suddenly in November, of cerebral hemorrhage.

Edward B. Mouser, Electra, Texas; University of Louisville (Ky.) School of Medicine, 1898; at one time mayor of Electra; aged 50; died, December 2.

Edward Harris Scatchard, Sewickley, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1901; aged 49; was found dead, December 1.

Joseph Leo Gavin, Boston (licensed, Massachusetts, 1898); aged 55; died, November 29, at the Peter Bent Brigham Hospital, of heart disease.

James O. McDowell, Sumner, Ill.; Eclectic Medical Institute, Cincinnati, 1874; aged 82; died, November 28, at the Olney (Ill.) Sanatorium.

Maximillian Charles von Groll, Boston; Tufts College Medical School, Boston, 1898; aged 52; died, November 11, of chronic myocarditis.

John W. Wilhoit, St. George, Kan.; Northwestern Medical College, St. Joseph, 1885; formerly county coroner; aged 72; died, November 28.

William M. Durham, Jr., Woodville, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1906; aged 42; died, November 29.

Almarian W. Dyer, Butler, Ill.; Starling Medical College, Columbus, Ohio, 1883; aged 72; died, December 2, of carcinoma.

Benjamin F. Holliday, Atlanta, Ga.; Southern Medical College, Atlanta, 1894; aged 59; died, November 29, at a local hospital.

Parker T. Trowbridge ⊕ Hayward, Wis.; Milwaukee Medical College, 1910; aged 38; died, in November, of heart disease.

Thomas W. Harris, Eugene, Ore.; University of California Medical School, San Francisco, 1875; aged 77; died, November 30.

Oliver B. Richards, Nova, Ohio; University of Wooster Medical Department, Cleveland, 1874; aged 76; died, December 3.

Charles Edward Page, Melrose Highlands, Mass. (years of practice); Civil War veteran; aged 85; died, November 23

Louis Feldman, Brooklyn; Long Island College Hospital, Brooklyn, 1910; aged 46; died, December 3, of heart disease.

Elison V. Buckley, Senath, Mo.; Willamette University Medical Department, Salem, 1881; aged 74; died, October 20.

Charles Lee Nollau, Henderson, Ky.; University of Louisville School of Medicine, 1901; aged 45; died, December 3.

Dave C. Sanders, Boswell, Okla. (licensed, Oklahoma, under the Act of 1908); aged 74; died, November 27.

John Leonard Marsh, Brownsburg, Ind.; Medical College of Ohio, Cincinnati, 1874; aged 74; died, December 4.

Elias Kline Boltz ⊕ Lebanon, Pa.; Jefferson Medical College of Philadelphia, 1896; aged 54; died, August 19.

Felix G. Thornton, Knightsville, Ind. (licensed, Indiana, 1897); aged 75; died, December 8.

Norman Hull, Howard, Ohio (licensed, years of practice); aged 85; died, November 24.

Correspondence

SYNERGISM OF MAGNESIUM SULPHATE AND MORPHIN

To the Editor:—In THE JOURNAL, November 7, appeared an article by Dr. Gwathmey which he describes as a reply to my work on the alleged synergism of magnesium sulphate and morphin. There are three tables. Table 1 furnishes data of a case in which the patient experienced greater relief from pain when given morphin plus magnesium sulphate than when given morphin alone. This mere fact does not, however, constitute proof that simple addition did not bring about this result; indeed, the second longest period of relief was experienced in one of the two instances only in which magnesium sulphate alone was used. Tables 2 and 3 comprise lists of cases in which the time before postoperative sedative was shown to be longer when morphin plus magnesium sulphate was used preoperatively than when morphin was used alone. Here again there is no evidence of synergism. Both experimental and clinical literature offer abundant proofs that magnesium sulphate is a powerful sedative, which evidence I have never sought to question; in fact, I have published certain observations of the powerful depressing effect it has on dogs. However, that the salt has the ability to raise specifically the sedative power of morphin either in dogs or in man, I do hold to be not proven.

Dr. Gwathmey's discussion of the synergism of magnesium sulphate and ether and his introduction of procain into the magnesium sulphate-morphin mixture serve only to confuse the studies. HARRY BECKMAN, M.D., Milwaukee.

Acting Director, Department of Pharmacology,
Marquette University School of Medicine.

"SYMMETRICAL CYANODERMA"

To the Editor:—In the Rio de Janeiro letter (THE JOURNAL, November 28) appears the abstract of a report by Dr. Moreira de Fonseca, dealing with a matter entitled symmetrical cyanoderma.

The description of the eruption is meager, but, judging from the brief account, the lesions and their mode of involution are very strongly suggestive of an eruption due to either phenolphthalein or antipyrin, administered by mouth.

It would be unwise to burden our overcrowded dermatologic nomenclature with the term "symmetrical cyanoderma," for it might be readily confused with such diseases as erythromelalgia, Raynaud's disease, pernio and erythredema.

FRED WISE, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

AUTOMOBILE ANTIFREEZING SOLUTIONS

To the Editor—What are the most commonly used antifreeze mixtures and what are their advantages and disadvantages? What are the percentages of ingredients to prevent freezing in this locality? Please omit name. T. H. P., M.D., Chicago.

To the Editor.—About a year ago I saw an answer to a query in regard to an antifreezing solution for use in winter in our cars. This article I have mislaid and cannot find. Would you be kind enough to send me that formula and inform me as to whether it evaporates, injures a radiator, at what point it boils, at what point it freezes and how strong a solution should be used? Or if you have by this time a better formula, you may send me that one. There are several on the market at this time made from a glycerin base but they are all expensive. If published, use initials only.

C. P. S.

Answer:—There are five types of antifreezing solutions for automobile radiators in use, each of which has certain advantages and disadvantages:

1. Alcohol (denatured). This is in most common use, approximately 28,000,000 gallons having been consumed in the United States for this purpose in 1924-1925. It has the advantages of being readily obtainable, of depressing the freezing point, and of having a satisfactory viscosity. The "strength" of the alcohol-water solution in the radiator can be measured by means of an hydrometer. Its shortcomings are that it has a lower boiling point than water; therefore, if proper precautions are not taken it will boil over; the solution loses its nonfreezing properties through continued use by evaporation of the alcohol, as a result of the relatively high vapor pressure. The alcohol vapors from overheated radiators are also inflammable, and the denaturants used are often obnoxious. Alcohol attacks automobile finishes.

2. Glycerol (glycerin). Glycerol, which should be of a relatively good grade, has the advantages that, once introduced into the radiator system in aqueous solution, it remains there unless lost through leakage or is removed intentionally; that is, it does not lose its effectiveness from use. Moreover, it is odorless and does not have the solvent action on finishes, as has alcohol. On the other hand, it is somewhat more expensive than alcohol, and as it is a by-product it is doubtful whether production can be increased sufficiently to meet the demand if it replaces alcohol. There has been an erroneous opinion that glycerol attacks the rubber connections. According to H. S. Corth (*Pharmaceutical Era*, Feb. 14, 1925, p. 212), the explanation is that some radiator hose is swelled by water. When this happens, the holding clamps dent into the hose. Glycerol tends to cause the hose to return to its original size, but the dents made by the clamps will remain in the rubber. The obvious cure, of course, is to tighten the clamps.

The following table, worked out by the Bureau of Standards, gives the temperature at which freezing starts, showing glycerol and alcohol to be of about equal value in lowering the freezing point:

Per Cent. by Volume	Glycerol	Denatured Alcohol
10	29 F.	27 F.
20	21	19
30	12	10
40	0	— 2
50	—15	—18

It should be remembered that solutions of both of the foregoing go through a mushy state before they get solid, so that a solid block of ice would not be formed until 10 or 15 degrees F. below the temperature given in the table.

The boiling points are as follows:

Per Cent. by Volume	Glycerol, Boiling Point, ° F.	Per Cent. Glyc. in Vapors	Alcohol, Boiling Point, ° F.	Per Cent. Alcohol by Weight in Vapors
10	214	0	199	49
20	216	0	190	64
30	217	0	187	71
40	221	0	183	76
50	225	0	181	80

3. Glycerol and Alcohol Mixtures: These are more satisfactory than alcohol alone because there is less loss of alcohol by evaporation; they are less expensive than glycerol alone because of the less amount required. To a certain degree they have some of the disadvantages of both alcohol and glycerol; one drawback is that the "strength" of the solution cannot be tested by an hydrometer because it contains three components.

The following table, taken from the *Pharmaceutical Era* (Dec. 6, 1924, p. 595) gives the freezing temperatures of alcohol-glycerol mixtures as:

Alcohol	Glycerol	Water	Freezing Point
15%	15%	70%	zero
16%	16%	68%	5 below
20%	20%	60%	20 below

4. Glucose or Honey Mixtures; Calcium Chlorid Mixtures: Glucose has been reported with success by a number, while others have found that it becomes "slushy" when the temperature is near zero, or that it causes overheated engines. It was thoroughly discussed in The Journal last year (Oct. 25, 1924, p. 1356; Dec. 13, 1924, p. 1942; Dec. 13, 1924, p. 1943; Dec. 27, 1924, p. 2113).

Calcium chlorid has also been used, but has generally been discarded because of its action on the metal.

5. Miscellaneous; Kerosene and Ethylene Glycol: Kerosene can be used with advantage in climates where the weather is severe. In warmer climates it causes a greatly overheated engine on warm days because of its poor properties of heat transfer. As there is no vaporizable component, the motor meter probably would not indicate high temperatures in the radiator system.

A new substance, ethylene glycol, has been proposed. From the research work done, it has promise of being of considerable merit (Ethylene Glycol; Curme, George, *Indust. & Engin. Chem.*, November, 1925, p. 1117). It possesses the advantages of alcohol and glycerol combined. It does not act on metals, is permanent, and has physical properties that permit maintenance of optimal engine temperature. It is not yet available in many localities, but large quantity production is promised. It requires a little less amount (by volume) than denatured alcohol for the same freezing points.

TRANSPLANTATION OF THE CORNEA

To the Editor:—Has there been reported a case of transplantation of the cornea? Please help me go over the literature. I will be much obliged for the information. I happen to think of this because I know of a friend who had a traumatic opacity of the cornea of his right eye, and all hopes were given up for recovery. If skin could be transplanted and grow, why could not the same thing happen with corneal transplant?

R. T. Altura, M.D., Detroit.

Answer.—Much work has been done with regard to the transplantation of corneal tissue to replace scarred cornea. A bibliography of all important articles to 1921 is appended, the most important ones being starred. Of all of the keratoplastic operations, the von Hippel through and through trephine operation has proved the most successful, particularly in the hands of Elschnig and his assistants. The latest report from that clinic concerned 115 cases in which corneal transplantation had been done. Economically useful vision was restored in approximately 10 per cent. of the cases; no change in vision occurred in about 65 per cent.; the vision became worse in about 15 per cent., and the eye was lost in about 10 per cent. The factors determining the success or failure of the operation could not be determined (apart from lack of strict asepsis), and the end-result did not become apparent until about six months had elapsed after operation.

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Von Hippel: *Arch. f. Ophth.*, 1888, p. 108; **22**: 79; **24**: 335.
Kraupa: *Centralbl. f. prakt. Augenh.*, 1914, p. 132; *Arch. f. Ophth.* **80**, 489.
Löhlein: *Arch. f. Augenh.* **67**: 398, 1910.
Magitot: Paris Ophthamological Society,* June 3, 1913.
Mühlhauer: *Schmidt's Jahresbericht* **35**: 267.
Plange: *Klin. Monatsbl. f. Augenh.*, 1912, p. 490.
Salzer: *Heidelberger Berichte*, 1917.
Szimanowski: *Klin. Monatsbl. f. Augenh.*, 1913, p. 870.
Wagenmann: *Arch. f. Ophth.* **34**: 217, 1888.
Walker, S., Jr.: *Ophth. Rec.* **26**: 383 (Aug.) 1917.
Wiener, Meyer: Regeneration of the Cornea,* The Journal, Sept. 4, 1909, p. 762.
Gradle, H. S.: Am. J. Ophth.* **4**: 895 (Dec.) 1921.

SCHNABEL'S METHOD OF OCULAR DIAGNOSIS

To the Editor:—Can you give me any information concerning the methods of Dr. Rudolph Schnabel of Munich, in his examination of the eye? I am informed that he makes many extraordinary claims as to the information which he can gain through an examination of the eye with his iridoscope. Some remarkable photographs of the human eye, magnified many times, were recently shown to me by one of his co-workers. My impression is that there is much truth in many of his assertions, but that many of his deductions are unjustified. Any information which you can supply me concerning this subject will be much appreciated.

J. J. Short, M.D., New York.

Answer.—A letter from Munich in the *Deutsche medizinische Wochenschrift* states that the Munich Aerztliche Verein recently devoted a session to "Homeopathy and Eye-Diagnosis," as both are much the fashion there at present and popular among the public. In the center of general interest is diagnosis by inspection of the eye, which is practiced partly by registered physicians, partly by laymen, partly with all modern equipment of apparatus, partly with the simple ophthalmoscope, but always with much success, according to the one making the diagnosis. Dr. Salzer, the professor of ophthalmoscopy, read the paper on this "So-Called Eye Diagnosis," and, the author remarks, "die wissenschaftliche Wertlosigkeit dieser Methode trat damit klar zutage" (the scientific worthlessness of this method was made very plain by what he said). . . . "Professor Salzer invited an eye-diagnosis colleague to a public test of his method, but the invitation has not been accepted."

DISTRIBUTION OF WHITE AND COLORED PHYSICIANS

To the Editor:—Would it be possible for you to get for us through your office, or tell us where we could get, the number of male white physicians in the United States in 1924, by States, and for the following cities: New York, Chicago, Philadelphia, Los Angeles, Cleveland, Boston, Detroit, Baltimore, St. Louis and Pittsburgh? We need these figures for the study of deaths among physicians by age groups and would be grateful if you could help us out.

HARRIET HUGHES, New York.

ANSWER.—The following table lists as nearly as possible the number of white and colored physicians in each state:

	Colored	Male and Female, White (Estimated)
Alabama	163	2,121
Arizona		378
Arkansas	95	2,117
California	25	8,338
Colorado	6	1,831
Connecticut	9	1,875
Delaware	17	239
District of Columbia	150	1,663
Florida	94	1,358
Georgia	255	2,867
Idaho		416
Illinois	132	10,611
Indiana	30	4,221
Iowa	5	3,373
Kansas	40	2,324
Kentucky	153	2,888
Louisiana	134	1,857
Maine		1,037
Maryland	73	2,240
Massachusetts	59	6,128
Michigan	42	4,795
Minnesota	12	2,811
Mississippi	107	1,595
Missouri	152	5,654
Montana		525
Nebraska	11	1,858
Nevada		129
New Hampshire	3	598
New Jersey	99	3,468
New Mexico	2	363
New York	175	17,496
North Carolina	254	2,027
North Dakota		285
Ohio	77	7,036
Oklahoma	180	2,344
Oregon		1,176
Pennsylvania	188	10,952
Rhode Island	11	760
South Carolina	153	1,164
South Dakota		604
Tennessee	154	2,974
Texas	180	5,883
Utah		505
Vermont		537
Virginia	200	2,334
Washington	3	1,778
West Virginia	69	1,684
Wisconsin	2	2,824
Wyoming		255
Total	3,514	143,496

ACNE ROSACEA

To the Editor—Please give me information concerning the treatment of acne rosacea, including the administration of the endocrine gland products. Please omit my name.

T. J R, Kentucky.

ANSWER.—Several factors have to be considered in the treatment of acne rosacea Errors of diet and gastro-intestinal disturbances of other sorts are contributing factors, and an examination has to be made to determine the presence or absence of these and treatment instituted according to the findings. Occasionally desiccated thyroid (thyroideum siccum U S. P.) is of service in women at the climacteric period. This should not be given, however, without determining its propriety by having a basal metabolism test made. Local treatment is of service but has to be regulated according to the character of the symptoms present. These are variable in different cases.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 12 Chairman, Dr. S. W. Welch, Montgomery.

ARIZONA. Phoenix, Jan 5-6. Sec, Dr. W O. Sweek, 404 Heard Bldg, Phoenix

COLORADO Denver, Jan 5. Sec, Dr. David A Strickler, 612 Empire Bldg, Denver.

DISTRICT OF COLUMBIA Jan 12 Sec., Dr. Edgar P. Copeland, Apt 104, Stoneleigh Court, Washington, D. C

HAWAII. Honolulu, Jan 11 Sec, Dr G C Milnor, 401 So Beretania St, Honolulu

ILLINOIS: Chicago, Jan. 19-21 Supt of Reg, Mr V C Michels, Springfield, Ill

INDIANA Indianapolis, Jan 12 Sec, Dr W T Gott, 421 State House, Indianapolis

MINNESOTA Minneapolis, Jan. 5-7. Sec, Dr. Thomas S. McDavitt, 734 Lowry Bldg, St Paul

NEW YORK Albany, Buffalo, New York, Syracuse, Jan 25-28. Chief, Mr Herbert J Hamilton, Department of Education, Albany

NORTH DAKOTA Grand Forks, Jan 5 Sec, Dr George M Williamson, Grand Forks

OREGON Portland, Jan 5-7 Sec, Dr N C. Coe, 1208 Stevens Bldg, Portland

PENNSYLVANIA Philadelphia, Jan. 26-30 Act Sec, Mr. C. D Koch, Harrisburg

RHODE ISLAND: Providence, Jan 7. Sec, Dr Byron U Richards, State House, Providence

SOUTH DAKOTA Pierre, Jan 19 Dir Med Licensure, Dr H R Kenaston, Bonesteel, S D.

UTAH. Salt Lake City, Jan 5 Director of Reg, Mr J T Hammond, 412 State Capitol Bldg., Salt Lake City.

WASHINGTON Olympia, Jan 12 Sec, Mr. William Melville, 15 Insurance Bldg, Olympia

WEST VIRGINIA Charleston, Jan 19 Sec, Dr W T. Henshaw, State Health Department, Charleston

WISCONSIN Madison, Jan 12-14 Sec, Dr Robert E. Flynn, 315 State Bank Bldg, La Crosse

Pennsylvania July Examination

Mr. C. D Koch, director of professional education, Bureau of the Pennsylvania Board of Medical Education and Licensure, reports the oral, written and practical examination held at Philadelphia and Pittsburgh, July 7-11, 1925. The examination covered 5 subjects and included 50 questions. An average of 75 per cent. was required to pass. Of the 289 candidates examined, 273 passed, and 16 failed Eight candidates were licensed by reciprocity, and 4 by endorsement of credentials The following colleges were represented:

College	Year Grad	Number Passed
PASSED		
Georgetown University School of Medicine	(1924)	2
George Washington University Medical School	(1924)	1
Howard University School of Medicine	(1924)	2
Northwestern University Medical School	(1925)	3
University of Illinois College of Medicine	(1925)	2
Indiana University School of Medicine	(1924)	1
Tulane University of Louisiana School of Medicine	(1922)	1
Johns Hopkins University Medical Department	(1923)	1
University of Maryland School of Medicine	(1923), (1924, 4)	5
Harvard University	(1924)	1
Tufts College Medical School	(1924)	2
University of Michigan Med School	(1887), (1921), (1924, 2)	4
St. Louis University School of Medicine	(1924)	1
University of Nebraska College of Medicine	(1923)	1
Cornell University Medical College	(1924)	2
New York Medical College and Hospital for Women	(1905)	1
University and Bellevue Hospital Medical College	(1924)	1
University of Buffalo Department of Med	(1914), (1924, 2)	3
Eclectic Medical College, Cincinnati	(1924)	2
Ohio State University College of Medicine	(1923)	1
University of Cincinnati College of Medicine	(1924)	1
Hahnemann Med College and Hospital of Philadelphia	(1924)	31
Jefferson Medical College of Philadelphia	(1908), (1922), (1923, 12), (1924, 65)	79
Temple University Department of Med	(1923), (1924, 12)	13
University of Pennsylvania School of Medicine	(1919), (1922, 2), (1923, 6), (1924, 36)	45
University of Pittsburgh School of Medicine	(1924)	30
Woman's Medical College of Pennsylvania	(1924)	5
Meharry Medical College	(1916)	1
University of Texas Department of Medicine	(1923)	1
Medical College of Virginia	(1919), (1923), (1924)	3
University College of Medicine, Richmond	(1899)	1
Queen's University Faculty of Medicine	(1924)	1
McGill University Faculty of Medicine	(1924)	1
University of Toronto Faculty of Medicine	(1916), (1923, 4), (1924, 11)	16
Comenian Univ., Bratislava, Czechoslovakia	(1919),* (1921)*	2
Licentiate of the Royal College of Physicians and Surgeons, London, England	(1923)	1
University of London, England	(1923)	1
University of Berlin, Germany	(1923)*	1
University of Heidelberg, Germany	(1921)*	1
University of Munich, Germany	(1921)*	1
University of Zurich, Switzerland	(1917)	1

FAILED

College	Year Grad.	Number Failed
Howard University School of [illegible]	[illegible]	2
Kentucky School of Medicine [illegible]	[illegible]	1
Maryland College of Eclectic [illegible]	[illegible]	1
Temple University Department of Medicine	(1922)	1
University of Pittsburgh School of Medicine	(1924)	1
Woman's Medical College of Pennsylvania	(1924)	2
University of Tennessee College of Medicine	(1909)	1
Vanderbilt University School of Medicine	(1923)	1
German University of Prague, Czechoslavakia	(1922)*	1
University of Marburg, Germany	(1923)*	1
University of Budapest, Hungary	(1906)*	1
University of Naples, Italy	(1916),* (1921)*	2
University of Rome, Italy	(1910)*	1

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
Howard University School of Medicine	(1915)	Missouri
Northwestern University Medical School	(1914)	Wisconsin
Indiana University School of Medicine	(1920)	Indiana
University of Michigan Medical School	(1917)	Michigan
College of Phys. and Surgs. in the City of New York	(1895)	New York
Jefferson Medical College of Philadelphia	(1912) (1921)	New Jersey, R. Island
University of Pennsylvania School of Medicine	(1921)	N. Carolina

ENDORSEMENT OF CREDENTIALS

College	Grad. Year	with Endorsement
University of Pennsylvania School of Med.	(1922), (1923)	N. B. M. Ex.
Woman's Medical College of Philadelphia	(1923, 2)	N. B. M. Ex.

* Graduation not directly verified by the American Medical Association.

Book Notices

The Anatomy of the Root-Canals of the Teeth of the Permanent Dentition. By Walter Hess, M.D., D.D.S., Professor of Operative Dentistry in the Dental College of the University of Zürich. The Anatomy of the Root-Canals of the Teeth of the Deciduous* Dentition, and of the First Permanent Molars. By Dr. Med. Dent. Ernst Zürcher, School-Dentist of Zürich. Cloth. Price, $5.50. Pp. 199, with illustrations. New York: William Wood & Co., 1925.

The authors have divided their book into two main parts, the first dealing with the anatomy of the root-canals of the permanent teeth. The first author gives a thorough review of the previous literature concerning the subject and then describes in detail the technic used in his own researches. Each tooth of the permanent set is given a separate chapter in which the minute anatomy of its root-canal is described, with a tabulation of the number of teeth examined, the number of canals found, the apical ramifications, the marrow canals, and the average percentage of each. In making this study the author has examined 2,800 teeth in persons ranging in age from 5 to 55 years. This part of the book is profusely illustrated, and credit should be given the publishers for their careful treatment of the illustrations. In the second part, the anatomy of the root-canals of the deciduous teeth, the author's treatment has been the same, and there are many beautiful illustrations. Since the proper treatment of disease of the dental pulp and of canals is based on the anatomy of the parts, every dentist who attempts such treatment should be thoroughly familiar with this excellent work. The anatomy of dental pulp is a most important factor in the problem of the pulpless tooth and its relation to systemic disease. All interested in this subject will find valuable material for study in this volume.

The Nursing of Eye Cases. By Louise Kingham, S.R.N., Matron of the Weymouth and Dorset County Royal Eye Infirmary. Paper. Price, 50 cents. Pp. 16. New York: Oxford University Press.

There can be no question in the mind of the reader of this pamphlet that Miss Kingham is an efficient and capable ophthalmic nurse; but she does not tell any one else how to be. The anatomy of the eye is described more briefly and in a more elementary manner than is usual in a grammar school physiology, although words of more than one syllable are used. Some of the commoner diseases of the eye are mentioned, and the treatment of each is spoken of briefly. But the treatment described is that employed by the surgeon, while the nurse is warned that she must not "even put drops in an eye without an order from the surgeon." The essentials of the technic of ophthalmic nursing are carefully hidden away in the text, without any cohesion. The illustrations so necessary for this type of instruction are lacking, and the word pictures that might take their place are stilted in style. We may demand too much from our nurses in this country, but certain it is that an American nurse could not go far on what she might learn from this pamphlet. On the other hand, instructions are contained in this book for the dressing of patients after operation for cataract, a procedure that is always carried out here by the surgeon or one of his medical assistants. Taken by and large, it is difficult to see any great sphere of usefulness for this book in this country.

Allergy, Asthma, Hay Fever, Urticaria and Allied Manifestations of Reaction. By William W. Duke, Ph.B., M.D. Cloth. Price, $5.50. Pp. 339, with 75 illustrations. St. Louis: C. V. Mosby Company, 1925.

The author concerns himself only with the clinical side of the subject, using chiefly quotations for its purely theoretical aspects. This feature, frankly admitted by the author, constitutes the weakness and strength of the book. The author utilizes a great deal of practical experience in a disease which he finds to some degree present in as many as 15 per cent. of subjects. This is important, since the manifestations of allergy are apt to produce particularly disagreeable symptoms and are accessible to treatment, if interpreted correctly. Unfortunately, too much stress is put on too exact diagnosis, which the average patient cannot afford, and too little on nonspecific treatment, which is and will have to remain in the hands of general practitioners. Nonspecific treatment is essential for immediate relief, as well as for those cases that yield to it. The specific tests may be negative because of inherent defects of biologic tests or because it is impossible to test for everything. A better outline of treatment, with emphasis on the nonspecific agents, would be valuable. A chapter on anaphylactoid reactions caused by physical agents makes an original and interesting contribution to the subject.

The Normal Diet. A Simple Statement of the Fundamental Principles of Diet for the Mutual Use of Physicians and Patients. By W. D. Sansum, M.S., M.D., Director of the Potter Metabolic Clinic, Department of Metabolism, Santa Barbara Cottage Hospital. Cloth. Price, $1.50. Pp. 72, with 1 illustration. St. Louis: C. V. Mosby Company, 1925.

This, as the subtitle indicates, is a statement of the fundamental principles of diet for the mutual use of physicians and patients. As a statement of principles for physicians, it leaves nothing to be desired; it is interestingly written and easily read. We fail to see how it can be of great service to patients. They cannot well separate principles from practice; for them a book on normal diet should contain instructions on how to construct such a diet. A simple statement of principles is of little practical assistance to the patient.

Sonderband zu "Strahlentherapie." Herausgegeben von Prof. Dr. W. Fälta, Prof. Dr. C. J. Gauss, Prof. Dr. Hans Mayer und Prof. Dr. R. Werner. Band IX. Physikalische und technische Grundlagen der Röntgentherapie. Von Dipl.-Ing. Dr. Phil. G. Grossmann. Paper. Price, 13.50 marks. Pp. 300, with 207 illustrations. Berlin: Urban & Schwarzenberg, 1925.

This is devoted to a discussion of the application of roentgen rays to therapeutic purposes. In order to supply the demands of the roentgen-ray therapeutist, as well as those of the scientific investigator, all the accepted theories and their influence on the practice of roentgen-ray therapy are thoroughly discussed according to the best and latest information obtainable. Although some of the intricacies of theory may be beyond the understanding of the practicing roentgenologist, he is supplied at the end of each chapter with a summary of all the practical deductions. Particular stress is laid on the explanation of the theory concerning the absorption of the energy of the roentgen rays. The production of roentgen rays and all the subsequent phenomena are explained by the basic fundamentals of the electron-ether theories, the transformation of the bulk of electronic motion into caloric energy incidentally being mentioned. The concepts of wave length, tension within the tube and the periodicity of the roentgen-ray oscillations also are thoroughly explained. A special chapter is devoted to the discussion of filtration of roentgen rays. In dealing with the biologic action of the rays on living tissues, the author calls attention to the fact that one must distinguish between immediate and remote affects. The chapter dealing with dosimetric problems is particularly instructive, stress being laid on the principal points governing the construction of the various tubes and apparatus. The usefulness of this chapter is enhanced by a wealth of practical suggestions, covering not only all the details of employment but also the methods of preserving a stable function and the correction of occasionally occurring deficiencies. The protection of the patient and the operator is clearly defined. This book is a reliable guide for the practicing roentgenologist and a valuable reference book for the investigating and constructing electrician.

Parasitology for Medical Students. By Alex. Mills Kennedy, M.D., Professor of Medicine, University of Wales. Cloth. Price, $3. Pp. 142, with 62 illustrations. New York: Oxford University Press, 1925.

Within brief compass, the author has sought to present to medical students the essential features of parasitology for use in clinical study. One short chapter is devoted to each of the major groups of animal and plant parasites. The introductory matter in these chapters is hardly well put and might properly be omitted, as every one today has available some good textbook on zoology. A marked lack of balance appears in the selection of material. Thus, among flukes *Fasciola hepatica* is given more than two pages, whereas *Clonorchis sinensis* gets only brief mention, and *Paragonimus* and *Fasciolopsis* are not mentioned. The first named species is rare as a human parasite, whereas the others are all of first importance. The only strongyle mentioned is the hookworm, though several others are of real if not equal significance. Among the protozoa also, important forms are omitted, whereas others are treated over fully. There is no excuse today for using such names as *Distomum sinense* or *Taenia mediocanellata*. The colored plate is very successful, and the illustrations of insects are good. Most of those on parasitic worms are poor. The idea of the author, and the form in which it is presented, is good, but unfortunately the execution of the plan is much less successful. Perhaps there may be a reason in an English publication for giving awkward fractions, such as 1/6 and 1/25 inch, and yet one wonders how many microscopists today really can use them.

Mother's Manual. The Coming and Care of the Baby. By Dorothy Bocker, A.M., M.D., Instructor of Physical Education at Columbia University. Cloth. Price, $2. Pp. 247, with illustrations. New York: Brentano's, 1925.

This little volume contains the usual amount of information to guide young mothers through their pregnancy and to direct them in the care of the infant. The book is well illustrated, and there is even a diagram entitled "Spanking the Baby." This is intended, of course, to illustrate a method of resuscitation immediately after birth. One may well imagine that a great deal of time and effort was spent in preparing the anatomic and physiologic portions of this book, though it really seems time wasted to attempt to inform the busy mother about these subjects. What she needs is dogmatic directions about the care, feeding, bathing and airing of her baby. We are continually surprised by the fecundity of this variety of book. Would that it were possible for some legislative body or national academy to take a census of the actual number of these books already in existence in the English language, so that a new society for the regulation of birth control might limit the ever increasing supply of them.

A Short Key to Both Sexes of the Anopheline Species of India, Ceylon and Malaya. By C. Strickland, M.A., B.Ch., Professor of Medical Entomology in the School of Tropical Medicine, Calcutta. Boards. Price, Re. 1/12. Pp. 19, with illustrations. Calcutta: Thacker, Spink & Co., 1925.

The importance of identifying mosquitoes correctly is so evident in public health work that all aids will be welcomed in a task that at best is difficult. Strickland's key is admirable. The book is concise, well arranged and illustrated with great skill. One rarely finds so successful an effort to place highly technical data at the command of those who need it but are not trained in the particular field.

Medicolegal

Practicing Medicine—Treatment of Disease—Evidence

(Wideman v. State (Ala.), 104 So. R. 438. Ex parte Wideman (Ala.), 104, So. R. 440)

The Court of Appeals of Alabama holds, in *Wideman* v. *State*, that it was not necessary to aver that the defendant (Wideman) treated human diseases by a "system of treatment." It was sufficient to aver that he treated or offered to treat diseases of human beings without first having obtained a license from the state board of medical examiners. One who treats, or offers to treat, diseases of human beings by the system known as "chiropractic" or as "osteopathy" or by any system of medicine in any of its branches or departments, as a profession and means of livelihood, without first having obtained a certificate of qualification from the state board of medical examiners, is "practicing medicine" within the meaning of the statute, and may be found guilty of "practicing medicine without having first obtained a certificate of qualification, etc." While each treatment constitutes a separate offense, numerous treatments by one holding himself out to the public as a practitioner of chiropractic constitute "practicing medicine" as those words are construed in *Bragg* v. *State*, 134 Ala. 165, 32 So. 767. Evidence of many treatments of the same person was permissible under a count of an indictment charging "practicing medicine." But the state may be required to elect for which treatment it prosecutes under a count of an indictment charging that the defendant did treat, or offer to treat, diseases of human beings without having obtained a certificate of qualification from the state board of medical examiners. Under such count, evidence of more than one treatment is admissible, if limited to the purpose of showing the guilty knowledge of the defendant in administering the treatment for which the state elects to prosecute. It was competent for the state to show that the defendant had offices in Montgomery and had a sign "Chiropractor" over the door. It was also competent for the state to show that the defendant treated the prosecuting witness "for sickness." But it was not competent for the state to prove, over the defendant's objection, that the prosecuting witness paid the defendant for the treatments administered to her by him or what the defendant's charges for such treatments were, unless this was shown to be of the res gestae (essential circumstances) of the treatment. Admitting, however, that technical error was committed in this last respect, still, as the state was, on the undisputed evidence, entitled to a conviction and the penalty imposed was the smallest fine provided by the statute, no injury could possibly have come to the defendant's cause by reason of the admission of evidence that the prosecuting witness paid the defendant for the treatments administered to her by him or what his charges for such treatments were, and the judgment of conviction of practicing medicine without a certificate of qualification is affirmed.

In *ex parte Wideman*, the Supreme Court of Alabama, in denying, on rehearing, a writ of certiorari to review the judgment of the court of appeals, says that it thinks it quite clear that the language of the present statute punishing "any person who treats or offers to treat diseases" was advisedly substituted for the language of the former statute punishing "any person who practices medicine or surgery," etc., in the light of the decision in *Bragg* v. *State*, the purpose being, by the use of a comprehensive and well understood phrase, to foreclose such evasive contentions as the one made in that case. The treatment of disease comprehends diagnosis and the prescription or application of remedies for its alleviation or cure. Besides the allopathic and homeopathic schools of medicine, both of which employ drugs in the treatment of disease, there are a number of drugless systems, such as osteopathy, hydropathy, electrotherapy, thermotherapy, psychotherapy and chiropractic. Manifestly, the phraseology of the present statute is designed to place under the regulation prescribed all those systems for the treatment of human diseases, as well as any other system that may be conceived. The offense denounced is treating, or offering to treat, human diseases without a certificate of qualification from the state board of medical examiners. The phrase "by any system of treatment whatsoever" is no part of the description of the offense. Certainly we cannot impute to the legislature the utterly irrational and destructive purpose of turning loose on the people of the state a horde of ignorant charlatans and quacks, to practice medicine as they please, so long as they are able to show that they use no system. Such practitioners would be far more dangerous than those who are intelligent and skilful enough to follow some system of treatment. The statute does not prohibit a merely casual and friendly service. The indictment in this case was sufficient without alleging, either generally or specifically, that the defendant used a system of treatment, and a demurrer on that ground was properly held to be without merit.

Sufficient Identification of Roentgenograms

(Greco v. Schmidt (N. J.), 129 Atl. R. 146)

The Court of Errors and Appeals of New Jersey says that in this action to recover for personal injuries to a child run down by a truck the defendant contended that the trial judge had improperly admitted in evidence roentgen-ray plates showing the character of the child's injury. This objection was based on the fact that the physician who produced the plates at the trial had not himself taken them. The plates, however, were taken by another physician, under the supervision of the one who testified, and at a hospital at which the witness was engaged in professional work, and to which the child was taken. The rule is, as laid down in the case of *Robinson* v. *Payne*, 122 Atl. 882, that if the correctness of roentgen-ray photographs is established by the testimony of the person making them, or if they are identified by the surgeon under whose general direction and for whose use they were made, and by whom they were used in his diagnosis of the bodily injury, they are admissible in evidence. This court is therefore of the opinion that the roentgen-ray photographs were properly admitted in evidence, as they were identified by the physician at the hospital to which the child was taken, and were made under his supervision and direction, and for his diagnosis of the injury.

Legal Remedy After Performing Services for Minor

(In re Dzwonkiewicz's Estate (Mich.), 203 N. W. R. 671)

The Supreme Court of Michigan says that a physician performed a surgical operation on, and attended for about five months, a minor who was seriously injured in an automobile accident. The minor's father had abandoned his family. The mother frequently met the physician at the hospital, but the question of compensation was not discussed with her. The probate court appointed her guardian of the minor, and she was paid $6,500, less attorneys' fees, in settlement of the claim for damages which she sought to recover against a company charged with responsibility for the accident. Then the physician filed a petition in the probate court, setting up the foregoing facts, and averring that the services rendered by him for the minor were of the value of $500, and that the guardian had sufficient funds in her hands to pay for such services. He asked for an order requiring payment by her. Proof was taken by the probate court. The charges were found to be reasonable, and an order was entered directing payment thereof by the guardian. That order was reviewed in the circuit court, which set aside the order of the probate court on the ground that the physician had "mistaken his remedy"; that he should have proceeded by suit against the guardian. The supreme court, however, holds otherwise, setting aside the order of the circuit court, and affirming that of the probate court. In doing so, the supreme court says that the services were performed by the physician without express contract for payment. The father had abandoned his family. There was no doubt that the minor was liable for the reasonable value of the services on an implied contract to pay therefor. Such services as were rendered by the physician were "necessaries," within the meaning of that term as applied to the liability of infants to pay therefor. The right of the physician to recover in this proceeding was dependent on the implied contract of the ward to pay him for his services. He had no contract with the guardian. The proceeding to obtain allowance of the claim was akin to that of a creditor with a claim against the estate of a person deceased. There is no more of a denial of the right to a jury trial in such a proceeding than in the allowance of claims against an estate by the probate court. In either case an appeal may be taken to the circuit court, where the liability and the amount thereof may be determined by the jury, if desired.

Power of Minors to Contract for Medical Services

(Aubel v. Sosso et al. (Calif.), 236 Pac. R. 319)

The District Court of Appeal of California, First District, Division 2, says that in this action by a minor suing by his guardian ad litem (for the litigation) to recover damages for injuries caused by being struck by an automobile, the defendants attacked the ruling of the trial court in allowing the question of special damages to be submitted to the jury. This attack was based on the theory that the father of the minor being legally liable to furnish his son with necessary medical attendance, no obligation attached to the son for those expenses and he was not, therefore, entitled to recover for the outlay in this action. It was also argued that if any recovery could be had for the medical attendance furnished to the son, it must be on the suit of the father alone. In support of their position, the defendants cited Sections 35-37 and 207 of the civil code of the state, and from these argued that a minor living with his parents is incapable of entering into a contract even for medical services. No authorities were cited in support of the position taken by the defendants, and from this court's reading of the sections it is satisfied that the civil code did not intend to place such limitations on the power of a minor. This court can see no reason to hold that merely because these sections of the code prohibit a minor from disaffirming a contract for necessaries when not living under the care of parent or guardian, he is thereby disabled from entering into a valid, though voidable, contract for such necessaries while living under the care of a parent or guardian. On the other hand, Section 207 indicates an intention contrary to that suggested by the defendants, because if a third person may, under that section, supply such necessaries and recover the reasonable value thereof from the parent, it is because the minor is legally qualified to contract for such necessaries with the third person. Therefore, without being cited to any authorities which support the propositions, this court is not prepared to hold that a minor may not make such a contract while living under the care of his parent or guardian. If the contract for such necessities on the part of the minor is valid, the fact that the obligation has been met by advancements on the part of the parent prior to the trial of the case is no defense to the recovery of special damages arising out of the defendant's negligence. Judgment for the plaintiff was affirmed, and a new hearing was denied by the Supreme Court of California.

Society Proceedings

COMING MEETINGS

American Pharmacological Society, Cleveland, Dec. 28-31. Dr. E. D. Brown, University of Minnesota, Minneapolis, Minn., Secretary.

American Physiological Society, Cleveland, Dec. 29-31. Dr. W. J. Meek, Science Hall, Madison, Wis., Secretary.

American Society for Experimental Pathology, Cleveland, Dec. 28-30. Dr. E. B. Krumbhaar, Philadelphia General Hospital, Philadelphia, Sec'y.

American Society of Biological Chemistry, Cleveland, Dec. 28-30. Dr. D. W. Wilson, University of Pennsylvania School of Medicine, Philadelphia, Secretary.

Federation of American Societies for Experimental Biology, Cleveland, Dec. 29-31. Dr. Walter J. Meek, Science Hall, Madison, Wis., Sec'y.

Isthmian Canal Zone, Medical Association of, Ancon, Jan. 19. Dr. David L. Robeson, Ancon Hospital, Ancon, Secretary..

Sioux Valley Medical Association, Sioux City, Iowa, Jan. 19-20. Dr. R. F. Bellaire, Trimble Block, Sioux City, Secretary.

Society of American Bacteriologists, Madison, Wis., Dec. 29-31. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to The Journal for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

Annals of Surgery, Philadelphia

82: 673-832 (Nov.) 1925

Epithelial Hyperplasia of Breast. G. L. Cheatle, London, Eng.—p. 637.
*Acute Hypotension of Cerebrospinal Fluid Following Cranial Traumatism. E. Stultz and P. Stricker, Strasbourg, France.—p. 678.
End-Results in Neurosurgery. W. Sharpe, New York.—p. 684.
*Surgical Treatment of Epilepsia Partialis Continua (Kojevnickovi). N. J. Beresnegovski, Tomsk, Siberia.—p. 698.
*Periarterial Sympathectomy. I. Cohen, New York.—p. 704.
*Neoplasms of Blood-Lymph-Vascular System; Endotheliomas. D. S. Pulford, Jr., Rochester, Minn.—p. 710.
*Klippel-Feil Syndrome. T. P. Noble and J. M. Frawley, Rochester, Minn.—p. 728.
Horseshoe Kidney. D. N. Eisendrath, F. M. Phifer and H. B. Culver, Chicago.—p. 735.
*Nonparasitic Chyluria. A. A. Kutzmann, Los Angeles.—p. 765.
Mechanism of Acute Osteomyelitis. A. O. Wilensky, New York.—p. 781.

Treatment of Acute Hypotension of Cerebrospinal Fluid.—Stultz and Stricker assert that the rational treatment of acute hypotension of the cerebrospinal fluid is the intravenous injection of from 30 to 40 c.c. of distilled water. The method is at once easy and safe. It may be advisable, in order to secure a definitive result, to repeat the injection twice or more. Sometimes the pressure becomes only stabilized after two or three hypertensive injections. Three cases are cited.

Treatment of Partial Continuous Epilepsy.—This disease is met very often in the north of Siberia, while in Europe it is comparatively rare. Village inhabitants are chiefly attacked with it. Probably the cold climate of Siberia plays some part in the etiology. Young persons, not older than 30, are chiefly affected. Hereditary syphilis is often marked and alcoholism prevails. Recent syphilis usually is not found. The Wassermann test gives negative results. The main symptoms of Kojevnickovi's epilepsy are continual convulsions of particular groups of muscles, as, for example, convulsions confined to one of the limbs. In spite of the strenuous work of the muscles of the affected limb atrophy often occurs. The local convulsions periodically change into total convulsions of epilepsy. The treatments are (1) medical, by the administration of preparations of bromin or mercury, and (2) surgical, as a decompression operation and one for the removal of cortical centers. Beresnegovski reports eight cases.

Periarterial Sympathectomy.—Eleven cases are reported by Cohen. Seven were of arteriosclerotic origin, two were thrombo-angiitic, one was caused by a trophic ulcer, and one by an ulcer in a mild diabetic, perhaps on a thrombo-angiitic basis. Three patients were completely relieved of pain, one of whom, however, lived too short a time to determine the permanency of the relief and one subsequently lost several toes in which dry gangrene existed at the time of the sympathectomy. One of the thrombo-angiitic patients showed slight but only temporary improvement. The trophic ulcer patient was somewhat benefited. In the remaining six cases no benefit could be seen from the operation.

Tumors of Blood-Lymph-Vascular System. — Pulford reviews 200 cases of neoplasm of the blood-lymph-vascular system: 183 angiomas, nine angio-endotheliomas, and eight endotheliomas. The original hypotheses seem established as facts: blood-vascular and lymph-vascular angiomas, while usually benign, are potentially malignant endotheliomas. There is an intermediate stage between these two represented by the angio-endothelioma which is relatively benign but definitely malignant. Malignant endotheliomas of the blood-lymph-vascular system exist as a pathologic entity. Just as a malignant tumor of the skin is recognized as a squamous-cell epithelioma by its differentiation into horny, protective epithelium, so may certain of the blood-lymph-vascular tumors be recognized as endotheliomas by their differentiation into tumor blood vessels.

Klippel-Feil Syndrome.—Numerical reduction of the cervical vertebrae is a comparatively rare congenital anomaly, but undoubtedly is more common than the literature would lead one to believe. Noble and Frawley report two cases. The clinical appearances of patients with this anomaly are characteristic: shortening of the neck, low implantation of the hair and limitation of neck movements. The pathologic changes may vary from absence of one or two cervical vertebrae to complete absence of the whole cervical spine. The condition is not incompatible with long life.

Nonparasitic Chyluria.—A case of unilateral nonparasitic chyluria, associated with a perirenal abscess, is reported by Kutzmann. Treatment is empiric. The intravenous use of neo-arsphenamin and pelvic lavages with from 1 to 3 per cent. silver nitrate solution has given encouraging results. Kidney exploration and nephrectomy have been done in cases showing poor progression.

Illinois Medical Journal, Oak Park

48: 337-420 (Nov.) 1925

Interpretation of Cough Symptoms. F. J. Kalteyer, Philadelphia.—p. 351.
Mental Health; Public Health Problem. C. F. Read, Chicago.—p. 355.
Functions of Skin; Relation to General Medicine. E. F. Mueller, New York.—p. 358.
*Treatment of Septicemias and Intoxications in Infants and Children by Exsanguination-Transfusion. A. Brown, Toronto.—p. 363.
Reclaiming Hopeless Chest Cases. D. W. Deal and H. H. Cole, Springfield.—p. 370.
Progress in Thoracic Surgery. C. A. Hedblom, Madison, Wis.—p. 374.
Gunshot Wound of Heart; Repair Under Local Anesthesia with Complete Recovery. K. A. Meyer and W. A. Brams, Chicago.—p. 379.
Gastro-Enterostomy in Treatment of Duodenal Ulcer. J. A. Hartwell and G. S. Dudley, New York.—p. 383.
Traumatisms of Head. H. C. Mitchell, Carbondale.—p. 391.
Defects in Tone Scale; Relation to Poor Spelling and Loss of Musical Tone. F. L. Alloway, Champaign.—p. 396.
Cholesteatoma Involving Ethmoidal Cells and Antrum of Highmore. G. C. Otrich, Belleville.—p. 397.
Ambulant Treatment for Hernia. G. A. McDonald, Fairfield.—p. 399.
Biology of Ductless Glands. W. L. Shank, DeKalb.—p. 404.
Diagnosis of Exophthalmic Goiter and So-Called Toxic Goiter. W. L. Bowen, Peoria.—p. 408.

Exsanguination-Transfusion in Intestinal Intoxication.—Brown reports on the results obtained from the use of Bruce Robertson's exsanguination-transfusion in the treatment of septicemia and intoxications of 105 cases of acute intestinal intoxications. Fifty-eight were cured; of eighty cases of erysipelas sixty-four were cured. Four cases of malignant scarlet fever were exsanguinated with complete recovery in all. In several cases of septicemia, cure was effected. In fifty-three cases of severe burns, twenty-nine patients were cured. The method has been used in other conditions in which there appeared to exist a form of unknown toxemia and in which all previous methods of treatment were unsuccessful. Instances of improvement and cure were noted in cases of severe acidosis of unknown etiology, primary peritonitis, infectious diarrhea in which there is always an accompanying toxemia, and diabetic coma, while no apparent benefit was noted in cases of uremia, toxemia of intussusception and general peritonitis.

Journal of Nervous and Mental Disease, New York

62: 449-560 (Nov.) 1925

*Brains with Total and Partial Lack of Corpus Callosum; Nature of Longitudinal Callosal Bundle. C. DeLange, Amsterdam.—p. 449.
Schizophrenia; Case. J. H. Cassidy, Washington, D. C.—p. 477.
Studies on Dementia Praecox. Conditions Which Might Have Affected Brain Before Onset of Disease. S. Kure and M. Shimoda, Tokyo.—p. 485.
*Etiology of Hydrocephalus. A. S. Maclaire, New York.—p. 498.

Absence of Corpus Callosum.—DeLange reports the case of a boy without a corpus callosum. The patient was born in asphyxia and did not increase in weight, though he was breast fed. The taking of the bottle in hospital often met with difficulties, because his breathing was oppressed then. The child's case resembled more or less a case of myxedema; he had the hard and harsh voice which is so characteristic of infants suffering from this disease. The forehead was very narrow and retreating; the temporal fossae were both sunken. Inspiration was somewhat difficult, as if there were an obstacle in the nasopharynx. Heart, lungs and abdomen were normal. The hands were somewhat in pronation and continually moving about (as if playing the piano). The child was slightly hypertonic. After taking the feeding bottle the child often became blue, not on the face, which generally kept its normal color, but on the rest of its head, which assumed a dark blue hue. The number of red corpuscles was 5,800,000; the Wassermann reaction was negative; the fundus oculi was normal. An examination of the skull by roentgen rays was also negative, as was the result of the urine examination. The child died of pneumonia. A detailed postmortem report is given. An extensive polygyria and the absence of the corpus callosum were striking.

Prenatal Cerebral Hemorrhage as Cause of Hydrocephalus.—In view of the fact that a hydrocephalus was present at the second examination eight weeks after birth, together with the absence of any such evidence at birth and an etiologic factor (hemorrhage), possible of producing adhesions, was present at the time of birth, Maclaire holds that it is logical to conclude that the incomplete absorption of the hemorrhage produced the organization residue, and the deposit of this new *formed tissue over the cortex and along the base of the* brain caused the development of the hydrocephalic condition in the course of eight weeks.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

26: 259-324 (Nov.) 1925

Inactivation of Atropin Sulphate by Rabbit Serum. J. LaBarre, Edinburgh.—p. 259.
*Physiologic Action of Furane. E. M. Koch and M. H. Cahan, Chicago. —p. 281.
*Effect of Sodium Arsenite on Blood Sugar Concentration of Rabbit and Dog. H. B. van Dyke, Edinburgh.—p. 287.
Metabolism of Salicylic Acid. E. G. Holmes, Cambridge, England.—p. 297.
Skin Absorption of Certain Gases. D. C. Walton and M. G. Witherspoon, Washington, D. C.—p. 315.

Action of Furane.—From the experiments made by Koch and Cahan it is evident that while furane has some anesthetic and analgesic properties, its toxicity is so great as to eliminate it from consideration for practical use. It seems to be a general protoplasm poison, completely inhibiting the growth of yeast. When given by inhalation it causes convulsions, apparently due to stimulation of the motor centers in the medulla and cord. This is followed by paralysis of the respiratory center and asphyxia. When administered in small doses by mouth it has a corrosive, solvent effect on the mucosa, causing a copious watery secretion. There is an increased permeability of the blood vessels, frequently producing extensive hemorrhages. Injection of 1.5 c.c. into a 10 kg. dog caused immediate death with symptoms and postmortem changes similar to those seen in acute prussic acid poisoning. There is a marked hyperemic condition of the lungs, dilatation of the veins and a bright, cherry red color of the blood.

Effect of Sodium Arsenite on Blood Sugar.—Van Dyke shows that sodium arsenite, intravenously administered in doses considerably below the lethal, causes a distinct but variable hyperglycemia in the rabbit. Accompanying this hyperglycemia there is a reduction in the blood alkali reserve; there is no significant alteration in blood concentration as indicated by determinations of corpuscle volume or percentage of hemoglobin. The hyperglycemia still appears after bilateral splanchnotomy or right splanchnotomy and left suprarenalectomy. Sodium arsenite, therefore, acts peripherally in all probability by increasing hepatic glycogenolysis. The hyperglycemia may be checked or prevented by insulin. Intravenous injections of sodium arsenite in the dog cause a reduction in the whole blood alkali reserve often with a slight hyperglycemia.

Journal of Radiology, Omaha

6: 431-474 (Nov.) 1925

Electricity in Pelvic Diseases of Women. H. W. Grote, Bloomington, Ill.—p. 436.
End-Results Following Physiotherapy. W. S. Keyting, Salt Lake City.—p. 441.
Treatment of Malignancies by Surgical Diathermy and Roentgen Ray. A. L. Yocom, Jr., Chariton, Iowa.—p. 444.
Skin Reactions to Simultaneous Treatments with Radiant Heat and Soft Roentgen Rays. J. A. Hawkins and H. Clark, New York.—p. 446.
Mediastinal Empyema; Case. W. Shepherd, Rulo, and C. L. Hustead, Falls City.—p. 449.

Kentucky Medical Journal, Bowling Green

23: 501-536 (Nov.) 1925

Acute Inflammatory Tubes. C. W. Hibbett, Louisville.—p. 503.
Acute Appendicitis. B. F. Zimmerman, Louisville.—p. 506.
Gallbladder in an Acute Abdomen. W. E. Fallis, Louisville.—p. 508.
Tubal Pregnancy. G. Aud, Louisville.—p. 510.
Perforations of Stomach and Intestine. I. A. Arnold, Louisville.—p. 512.
Intestinal Obstruction. E. S. Allen, Louisville.—p. 514.
Renal Infection. S. C. McCoy, Louisville.—p. 516.
Muscular Dystrophies. C. E. Gaupin, Louisville.—p. 523.
Juvenile Dystrophies. P. F. Barbour, Louisville.—p. 524.
Orthopedic Considerations of Muscular Dystrophies. J. D. Trawick, Louisville.—p. 526.
Endocrinology of Muscular Dystrophies. E. L. Dravo, Louisville.—p. 527.
Treatment of Muscular Dystrophies. J. J. Moren, Louisville.—p. 528.

Northwest Medicine, Seattle

24: 529-592 (Nov.) 1925

Medicine in Idaho. C. W. Pond, Pocatello.—p. 529.
Achlorhydria Family Tree of Diseases. H. A. Christian, Boston.—p. 531.
Eclampsia. C. J. McCusker, Portland, Ore.—p. 536.
Internist Claims Eclampsia. J. F. Griggs, Tacoma.—p. 539.
Morphin-Scopolamin Analgesia in Obstetrics. A. W. Holman, Portland, Ore.—p. 543.
Gwathmey Method of Synergistic Anesthesia in Obstetrics. C. E. Hunt, Eugene, Ore.—p. 546.
Prolonged Labor. J. T. MacKay, Hillsboro, Ore.—p. 551.
Use of Radium in Certain Types of Uterine Bleeding. O. B. Wight, Portland, Ore.—p. 554.
Management of Summer Diarrhea. P. D. McCornack, Spokane.—p. 556.
Balantidial Dysentery. D. T. Ford, Pullman.—p 558.
Pellagra, Secondary to Voluntary Inanition. N. W. Jones, Portland, Ore.—p. 559.
Trypanosomiasis. I. P. Bartle, North Bend, Ore.—p. 561.
Treatment of Diabetes. I. C. Brill, Portland, Ore.—p. 562.
Twenty-Four Hours of a General Practice. W. L. Hunt, Klamath Falls, Ore.—p. 564.

Radiology, St. Paul

5: 365-458 (Nov.) 1925

Radiography of Infant Chest; Progression of Chest-Determination of the Normal. W. W. Wasson, Denver.—p. 365.
*Radium and Roentgen Rays in Treatment of Round Cell Sarcoma. B. F. Schreiner and C. C. Herger, Buffalo.—p. 399.
*Granulomas: Hodgkin's Disease, Lymphosarcoma and Leukemia. A. Soiland, Los Angeles.—p. 410.
Roentgen-Ray Diagnosis of Renal Tumors. K. T. Myer, Evansville, Ind. —p. 416.
Radio-Active Substances: Therapeutic Uses and Applications. J. Muir, New York.—p. 425.
Protection from Roentgen-Ray Standpoint. E. C. Jerman, Chicago.—p. 430.
Case of Typhoid Pneumonia. W. W. Beldon, New York.—p. 435.
Case of Detection of Foreign Body. H. L. Harris, Columbus, Ohio.—p. 436.
Simple and Effective Method for Making Positive Film Productions from Roentgen-Ray Negatives. A. R. Sheldon, Highland Park, Ill.—p. 437.
Easel for Rapid Serials in Gastro-Intestinal Examinations. E. G. C. Williams, Danville, Ill.—p. 438.
Roentgen-Ray Consultations of Future. G. Bartlett, Schenectady, N. Y. —p. 439.

Radium and Roentgen-Ray Treatment of Round Cell Sarcoma.—Schreiner and Herger have obtained what is apparently a clinical healing in thirteen out of thirty-five cases of round cell sarcoma which had lasted for periods varying in time up to six years and three months. In one group of cases, irradiation has yielded startling primary results, but recurrences in other parts of the body and anemias have proved fatal in almost all the cases. In the lymphosarcomatosis cases it is far better to divide a definite amount of irradiation over a period of time, from one to two weeks, in order that the body dose be as small as possible. Roentgen rays and radium together, with arsenic medication, are the methods of choice in the treatment of round cell sarcoma.

Cause of Death in Granulomas.—The terminus of these cases, Soiland says, is nearly always found in the deep abdominal glands where the pathologic change becomes firmly entrenched and resistant to any therapeutic attack. It appears that one may successfully destroy the altered lymph nodes in every part of the economy, even including those of the mediastinum, but the glands in the abdominal cavity are the cause of death.

Southern Medical Journal, Birmingham, Ala.

18: 777-858 (Nov.) 1925

Abscess of Lungs. M. C. Pincoffs, Baltimore.—p. 777.
*Treatment of Pneumonia in Children with Mercurochrome Intravenously. L. D. Hoppe and W. T. Freeman, Atlanta, Ga.—p. 784.
New Nomenclature in Bacteriology. C. Phillips, Richmond, Va.—p. 787.
*Simulation of Brain Lesions by Disease of Paranasal Sinuses. D. D. V. Stuart, Jr., Washington, D. C.—p. 790.
*Sprue in Section of South. W. H. Lewis, Rome, Ga.—p. 794.
Sickle Cell Anemia: Case. S. C. Jamison, New Orleans.—p. 795.
*Milk Sickness. G. R. Wilkinson, Greenville, S. C.—p. 797.
Two Cases of Ichthyosis Treated with Ultraviolet Ray. C. Swanson, Atlanta, Ga.—p. 800.
Report of Two Hip Operations. W. L. Sneed and R. H. Patterson, New York.—p. 803.
Management of Disabling Deformities Following Poliomyelitis. W. B. Owen, Louisville.—p. 808.
Common Nonsurgical Bone Lesions of Childhood. J. A. Foote, Washington, D. C.—p. 812.
Syphilitic Prenatal Treatment. W. J. Young and C. H. Likins, Louisville.—p. 815.
Internist's View of Chronic Disabilities. G. Walsh, Fairfield.—p. 818.
Status of Various Electrical Modalities Used in Diseases of the Ear. L. H. Lanier, Texarkana.—p. 821.
*Screw Worms from Soft Palate. L. S. Gaudet, Natchez, Miss.—p. 824.

Treatment of Pneumonia in Children.—The observations made by Hoppe and Freeman on the effect of mercurochrome-220 soluble on pneumonia are based on a series of forty-six cases, of which twenty-three were bronchial and twenty-three lobar in type. In these forty-six cases, twenty-three patients received mercurochrome and twenty-three were used as controls. Of the twenty-three controls, the average duration of illness was 16.5 days, while with those receiving mercurochrome the average duration of illness was 6.5 days. In three of these, the crisis occurred on or before the third day. The twenty-three patients treated with mercurochrome were sick on an average of 2.25 days after the first dose was given. The mortality of the control group was 39 per cent. Of those treated with mercurochrome, the mortality was 8.5 per cent.

Sinus Disease Simulates Brain Lesions.—Stuart is of the opinion that disease of the posterior ethmoid cells and sphenoidal sinuses at times produces signs and symptoms closely simulating those of organic brain disturbances, especially tumors and epidemic encephalitis. Whether or not this simulation occurs depends on the anatomic relations of the sinuses in question.

Sprue in Section of South.—Lewis' observation has been that there is a large proportion of sprue in the South and that it is not restricted by any degree of latitude. It is probably greatly confused with pellagra and, on account of a definite element of transmissibility, warrants the most careful study. Its principal features involve perverted intestinal digestion, possibly associated with a monilia. This digestive disturbance has, in Lewis' experience, been greatly improved by the feeding of bile salts.

Milk Sickness.—Six cases are reported by Wilkinson. The most striking feature of the clinical picture is the acidosis. The treatment of this single feature, with glucose in the form of molasses, has given prompt relief from the acute intoxication.

Screw Worms in Soft Palate.—In Gaudet's patient, examination of the throat revealed the soft palate to be very much swollen, with a perforation through the central part extending clear through, about the size of a 25 cent piece. This perforation was filled with worms burrowing in every direction into the tissues. Careful examination of the nose showed no worms at all in the nasal cavity at the time, though repeated examinations were made. Sixty-two worms were extracted.

Wisconsin Medical Journal, Milwaukee

24: 288-350 (Nov.) 1925

General Biologic Considerations. M. F. Guyer, Madison.—p. 288.
Biologic Basis of Immunity. K. E. Kassowitz, Milwaukee.—p. 300.
Influence of Ductless Glands on Biologic Reaction. E. C. Kendall, Rochester, Minn.—p. 303.
Cell Reactions in Resistance and Immunity. C. H. Bunting, Madison. —p. 305.
Care of Insane. H. H. Christopherson, Colby.—p 311
Treatment of Finger Infections. R. M. Carter, Green Bay.—p. 312.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Irish Journal of Medical Science, Dublin

337-400 (Aug.) 1925

*Rotunda Lying-In Hospital Report for 1923-1924. G. Fitzgibbon, R. M. Corbet and N. M. Falkiner.—p. 337.

Maternity Work in Rotunda Lying-In Hospital.—During the year 1923-1924, 1,973 patients were admitted to the Rotunda Lying-In Hospital and 1,703 were confined. Normal vertex was the presentation in 1,498 deliveries. This includes all occipitoposterior positions which underwent normal rotation. Eighteen vertex presentations were finally delivered as persistent occipitoposterior. Face presentation, excluding anencephalus, occurred eight times. Transverse presentation, excluding multiple pregnancies, occurred in five cases. Compound presentations occurred four times. Breech was the primary presentation in fifty-one cases, besides occurring in one of twins on nine occasions. There were twenty cases of twin pregnancies and seventeen cases of prolapse of the cord. Forceps were applied for the delivery of 101 patients, seventy-eight primiparas and twenty-three multiparas. Version was performed thirty-one times. In four cases the fetus was broken up to effect delivery. Persistent primary uterine inertia was present in eight cases. There was only one case of definite contraction ring dystocia. Induction of labor was performed thirty times and induction of abortion or miscarriage seven times. Eight cases of accidental hemorrhage occurred. There were twelve cases of placenta praevia, seven cases of postpartum hemorrhage and three cases of rupture of the uterus. The placenta had to be removed manually nineteen times. There were 163 patients with external measurements considerably under normal. Internal pelvimetry was done only once as dependence was placed far more on the application of the head to the pelvic brim, as made out under anesthesia and by noting the progress of labor, than on the actual dimensions of the pelvis. Delivery was effected by cesarean section nineteen times; six patients had sections done previously; in two patients it was the third section. One patient was delivered by pubiotomy after thirty-six hours in labor, the head being impacted in the brim. In sixteen cases treatment was by induction of labor—eleven times for definite contraction of the pelvis and five for disproportion owing to the large size of the fetus. In 220 patients the urine was found to contain a marked amount of albumin. In three cases hyperemesis occurred. There were ten deaths in the intern department; the causes were: sepsis, rupture of a cesarean scar, rupture of the uterus during evacuation, and hemorrhage in a full term ectopic pregnancy, the patient dying just after laparotomy. One patient died of cardiac failure from myocarditis. In the extern department there were eleven deaths, making in the whole maternity service twenty-one deaths. Twelve patients were admitted on account of pain and were found to have pyelitis. There were three cases of hydatid mole; three cases of multiple fibroids of large size with pregnancy; one case of chorea; four cases of mania and one of marked mental derangement for a few days after eclampsia; one case each of herpes, gallstones, appendicitis, anemia, erysipelas and thrombosis of the saphenous vein.

Medical Journal of Australia, Sydney

2: 471-496 (Oct. 17) 1925

Recent Advances in Cancer Work. A. H. Thwaites.—p. 471.
Diabetes. E. Russell.—p. 479.
*Liver in Umbilical Cord of New-Born Infant; Case. P. L. Hipsley.—p. 484.

Liver in Umbilical Cord.—Hipsley reports the case of an infant seen twelve hours after birth that presented a spherical enlargement of the umbilical cord about 3 inches (7.5 cm.) in diameter in its widest portion. None of it was covered by skin. When this mass was opened, the liver was found within it. The liver was returned within the abdominal cavity. The infant made an uninterrupted recovery, and three weeks later appeared to be perfectly normal.

Archives des Maladies de l'Appareil Digestif, Paris

15: 751-870 (Oct.) 1925

*Pancreatic Fistula M. Villaret and L Justin-Besançon.—p. 751.
*Cholesterol in Duodenal Juice M Chiray et al—p 768.
Duodenal Tube in Diagnosis of Cholecystitis. F. Ramond et al—p. 778.
Carcinoma of Esophagus and Radium Treatment Cornioley and Gilbert.—p 790
*The Diazo Reactions G Piotrowski—p 798

Clinical and Physiologic Study of Pancreatic Fistula.—Villaret and Justin-Besançon have had the opportunity to study for seven months and apply various tests to a fistula of the pancreatic duct, consecutive to a gastro-enterostomy, subtotal gastrectomy and exclusion of the pylorus, in a man, aged 43 The rhythm of the secretion of pancreatic juice appeared markedly changed, the assimilation of nitrogen, phosphorus and sulphur considerably reduced The internal secretory function of the pancreas appeared unaffected. The pancreatic juice did not contain invertin, trypsin production seemed normal or enhanced Insulin did not modify the secretion; the influence of atropin was indirect. Injection of magnesium sulphate into the jejunum provoked the appearance of bile, without stimulation of the pancreatic secretion The influence of hydrochloric acid was the reverse of this No tendency to a psychic pancreatic secretion could be detected The fistula did not improve spontaneously, nor heal under the action of insulin or atropin Only an operation restored the passage of pancreatic juice into the intestine

Technic for Dosage of Cholesterol in Duodenal Juice.—Chiray and his co-workers describe a simplified Grigaut method for clinical dosage of cholesterol in the duodenal juice, obtained by intubation. With this method, they say the colorimetric reading is easy and rapid The findings are sufficiently exact for clinical purposes

Mechanism of Diazo Reactions.—Piotrowski's study confirmed that the bilirubin in mechanical jaundice is identical with that in hemolytic jaundice. The direct diazo reaction depends on the presence of free bilirubin in the serum; the indirect, on association of bilirubin with the proteins of the plasma. The intensity of adsorption phenomena is connected with the amount of proteins and cholesterol in the blood Doubt is expressed as to the diagnostic value of the diazo reaction in dubious cases

Presse Médicale, Paris

33: 1489-1504 (Nov 11) 1925

*The Blood Pressure in Aviators R Cruchet—p 1489

Influence on the Blood Pressure of Variations in Atmospheric Pressure.—Cruchet reiterates that under the low air pressure at high altitudes, the arterial pressure in the flyers increases. The pressure becomes normal and all other phenomena of flight sickness disappear as soon as oxygen is regularly inhaled. He asserts that the influence of oxygen is still manifest at an altitude of 8,000 meters, and probably even higher. Even the untrained can bear without harm an air pressure corresponding to an altitude of 8,000 meters if they inhale oxygen regularly. He gives charts showing the regular rise and fall of the blood pressure above and below normal as the atmospheric pressure in the air chamber was varied to correspond to very high altitudes or sea level

33: 1505-1520 (Nov 14) 1925

*Conjugal Neurosyphilis A Sézary—p 1505
*Skin Reactivity to Roentgen Rays. L Neu—p 1506.
Gerhardt Urine Test J W. Grott—p 1507
Endoscopy of the Abdomen A Ravina—p 1508

Pathogenesis of Conjugal Neurosyphilis.—See Paris Letter, page 1902

Susceptibility of the Skin to Roentgen Rays in Various Diseases.—Neu's investigation indicated that an exaggeration of this susceptibility was most pronounced in exophthalmic goiter; less with tuberculous glands, and still less with fibroma. In exophthalmic goiter, the fact may be partly ascribed to a general irritability of the vessels; in the other affections, neither anemia nor hyperemia of the skin can be incriminated. The factor modifying the skin susceptibility is still a mystery.

Schweizerische medizinische Wochenschrift, Basel

55: 1041-1064 (Nov. 12) 1925

*Cow's Milk and Infants E. Feer.—p. 1041.
Anemias. Naegeli—p. 1043
Climatology of High Altitudes. C. Dorno—p. 1046.
Endocrine and Cerebral Obesity. A Oswald.—p. 1048.
Thermal Waters of Baden (Switzerland). J. Markwalder.—p. 1053.
Alveolar Pyorrhea. O. Muller.—p. 1055. C'td.

Cow's Milk and Infants.—The experiences of the last ten years have convinced Feer that the 600 c.c. of cow's milk he had recommended for infants in 1916 is still too much. He does not give more than 500 c c daily. He recommends 100 gm per kilogram of body weight up to the amount mentioned, and adds water, sugar, flour and, after the sixth month, thin gruel, soup, vegetables, fruits, later zwieback and bread crust Fresh fruit juice (teaspoonful) may be given even as early as in the fourth month. He reduces the milk in the second year to 400 c.c. and later to 200-300 c.c. daily. Sometimes it is better to avoid it entirely, especially with anemia Two diet lists for children are suggested

Revista de la Soc. Arg. de Neurología, Buenos Aires

1: 59-81, 1925

*Oneiric Trigeminal Neuralgia J M. Obarrio—p 59
Living Cysticercus Racemosus Found in Brain at Decompressive Operation M Alurralde and M J. Sepich—p. 65.
Acute Delirium with Purulent Stomatitis; Two New Cases Nerio Rojas and J C Belbey—p 77.

Nocturnal Trigeminal Neuralgia.—The neuralgia had been constantly recurring for fifteen months, almost exclusively during sleep Obarrio has found insufficiency of the liver in all such oneiric disturbances, and cures them promptly by a nontoxic diet, supplemented by a glass at each meal of a solution of 10 gm of sodium sulphate, 5 gm of sodium phosphate and 5 gm of sodium bicarbonate in 1 liter of water. The oneiric neuralgia or delirium appears when digestion has reached the peak of absorption from the intestine, with the liver function and the elimination of carbon dioxid at their lowest point. He sometimes gives peptone in addition; this alone cured the nocturnal neuralgia in a case reported in the *Presse medicale* in 1922.

Deutsche medizinische Wochenschrift, Berlin

51: 1893-1934 (Nov. 13) 1925

Scarlet Fever U. Friedemann and H. Deicher.—p. 1893 C'td
*Antibacteriophage Action of Human Serum S. Katsu—p. 1896.
Tabes and Paralysis in Civilized Peoples. H. Salomon—p. 1897.
Chronic Arthritis in Palestine M. Buchmann.—p 1899.
Ovarian Substitution Treatment W. Hannes—p 1901.
Fractional Examination of the Stomach. L Bogendörfer.—p. 1902.
Treatment of Placenta Praevia. F. Netzer.—p. 1903.
*Prognosis of Genuine Nephrosis. H Steinitz.—p 1906.
Polychromophilic Erythrocytes G Volk—p. 1907.
*Urea in Saliva as Kidney Function Test Simmel and Küntscher—p. 1909.
Serologic Reaction with Alcoholic Extracts Luttge and v. Mertz.—p. 1911.
Direct Gastroscopy W Sternberg—p 1911.
Treatment of Gastric Ulcer Jüngerich—p 1912.
Treatment of Itching Dermatoses W Joseph.—p 1915.
Drugs Acting on Blood Vessels Handovsky and Seyderhelm—p. 1915.
Social Insurance and Tuberculosis Blümel—p 1916 C'tn
Action of Minute Amounts Buttersack—p. 1928. C'cn

Antibacteriophage Action of Human Serum.—Katsu found a strictly specific antibacteriophage action in a serum which agglutinated the Flexner type of dysentery bacilli. A similar action was observed in three other serums which also agglutinated these bacilli. Treatment of the serum with the bacilli did not diminish its antibacteriophage action. He agrees with Sonnenschein that the method might prove valuable in diagnosis

Prognosis of Genuine Nephrosis.—Steinitz reports an instance of complete recovery from grave genuine nephrosis (nephritis with edema without hypertension or hematuria). The boy, 11 years old, recovered under treatment with large doses of urea (up to 100 gm. daily), and is healthy at present, eight years after the disease

Urea in Saliva as Kidney Function Test.—Simmel and Kuntscher confirm the practical value of Hench and Aldrich's salivary urea index.

Klinische Wochenschrift, Berlin

4: 2185-2232 (Nov. 12) 1925

Blood Transfusion in Pediatrics. Opitz.—p. 2185.
*Research on Gastric Secretion. G. Katsch and H. Kalk.—p. 2190.
*Differentiation of Tissues. Christeller and Kaiser.—p. 2193.
*Sleep. R. Heilig and H. Hoff.—p. 2194.
Susceptibility to Tuberculin. G. Brückner.—p. 2198.
Syphilitic Atrophy of Muscle. E. Guttmann.—p. 2200.
*Oxydases of Leukocytes. H. Mielke.—p. 2201.
*Conducting Power of Cerebrospinal Fluid. Schaefer.—p. 2202.
*Function Test of Reticulo-Endothelial System. A. Memmesheimer and G. H. Klövekorn.—p. 2204.
*Stomach Tube and Stimulus. L. Hirschberg and T. Ganskau.—p. 2205.
"Surgical Treatment of Nephritis." M. Zondek.—p. 2206.
Experimental Block of Branch of Bundle of His. D. Scherf.—p. 2207.
*Constancy of Gas Metabolism Under Normal Conditions. M. Reiss and R. Weiss.—p. 2207.
Purulent Foci in Lungs. P. Müller and P. P. Gotthardt.—p. 2208.
Treatment of Syphilis of Aorta. G. Hubert.—p. 2210.
Present Status of Sleeping Sickness. E. Steudel.—p. 2214.
Treatment of Ozena. O. Nast.—p. 2229.

Research on Gastric Secretion.—Katsch and Kalk found in caffein (0.2 gm. of pure caffein in 300 gm. of water) an almost equally good substitute for the alcohol test meal.

Formation of Iron Salt in Differentiation of Tissues.—Christeller and Kaiser treated fresh tissues with iron salts and later with hydrochloric acid and potassium ferrocyanid. The cytoplasm of epithelial cells—especially cancer cells—but also the muscles accepted the iron. They point to a possibility that the presence of lactic acid plays a rôle.

Sleep.—Heilig and Hoff found a "vagotonic" blood pressure reaction to epinephrin during sleep; the alimentary glycemia is higher in normal and paraldehyd sleep. The cerebrospinal fluid contains more sugar and protein, less chlorids. The blood from sleeping persons lowered the number of drops in the Läwen-Trendelenburg frog preparation much less than the blood from the same subjects when awake.

Oxydases of Leukocytes.—Mielke believes that Graham's distinction of four types of neutrophils according to the number of granules containing a peroxidase is based only on technical errors.

Conduction in Cerebrospinal Fluid.—The electric conductivity of cerebrospinal fluids in Schaefer's determinations averaged $1.49 . 10^{-2}$. The extreme figures were $1.05 . 10^{-2}$ and $2.00 . 10^{-2}$.

Function Test of Reticulo-Endothelial System.—Memmesheimer and Klövekorn injected intravenously a fine emulsion of oil, and examined blood smears with the dark field illuminator. The droplets disappeared very slowly in patients with secondary syphilis—especially those under arsphenamin-bismuth treatment. The injection induced a shock in some patients, in whom a rapid disappearance of the fat had been observed.

Stomach Tube and Mechanical Stimulus.—Hirschberg and Ganskau do not believe in the mechanical provocation of gastric secretion. It is only a continuation of the secretion which had been going on before the tube was introduced. It is simply the well known psychic secretion, caused usually by the observation of the breakfast being taken by others in the room. This fasting secretion stops after injection of atropin. A digestive secretion continues in spite of it.

Constancy of Gas Metabolism.—Reiss and Weiss determined the oxygen consumption in mice and rats in twenty-four hour periods. The animals were allowed to move about and eat. The oxygen intake was remarkably constant (± 5 per cent.).

Medizinische Klinik, Berlin

21: 1713-1750 (Nov. 13) 1925

Cardiac Dyspnea. R. Cobet.—p. 1713.
*Suprarenals After Insulin. H. Poll.—p. 1717.
*The Colon Problem. F. Pendl.—p. 1720.
Heating Apparatus for Premature Infants. L. Moll.—p. 1723.
Stenosis of Bronchus. O. Glogauer.—p. 1724.
Serotherapy of Cancer. H. Elsner.—p. 1726.
The Urochromogen Reaction. J. Wirges.—p. 1727.
Hematology of Scarlet Fever. H. Bix.—p. 1728. C'cn.
*Treatment of Enuresis. P. Freud.—p. 1729.
Hospitalism of Infants. L. Bytsch.—p. 1730. C'cn.
Lability Tests. G. Salus.—p. 1732.
Recent Works on Cardiovascular Disease. E. Edens.—p. 1737.
Science and Economics. E. Loewy-Hattendorf.—p. 1749.

Suprarenals After Insulin.—Poll examined the suprarenal glands in various animals after injections of insulin. He found hyperemia, changes of distribution of lipoids, and loss of chromaffine substance. The latter could be prevented by injections of epinephrin.

The Colon Problem.—Pendl administers at least half a tablespoonful of castor oil for ten days after sutures of the colon. It keeps the contents fluid, and thus avoids the tension of gas behind hard scybala. He lost two out of thirty-seven patients.

Treatment of Enuresis.—Freud applied ethyl chlorid to freeze the skin covering the sacral bone or above the symphysis. He reports excellent results after one or two such procedures. Freezing the chest or back was of no value.

Monatsschrift für Kinderheilkunde, Leipzig

31: 97-192 (Nov.) 1925

Skin Diseases and Infections in Children in 1924. C. Leiner.—p. 97.
Epilepsy of Genital Origin. J. S. Galant.—p. 117.
The Rickets-Tetany Problem. K. Waltner.—p. 129.
*Lactation and Submammary Temperature. L. Moll.—p. 140.
Tonsillitis with Lymphatic Reaction. C. Nelken.—p. 151.
Hyperacidity in Infants. G. Török.—p. 157.
*Complexion in Pyuric Infants. W. Lasch et al.—p. 164.
Reduction Index of Urine. G. Török.—p. 169
The Idiomuscular Reflex. G. Kán.—p. 174.
Drugs and Alimentary Leukocytosis. G. Torok.—p. 178.
Phototherapy of Hydrocele in Infants. G. Török.—p. 181.

Lactation and Submammary Temperature.—Moll observed in lactation a higher temperature in the skin fold below the breast than in the axilla. It is almost as high as the rectal temperature. It is a good indicator of the ability to produce milk.

Complexion in Pyuric Infants.—Lasch, Fischer and Silber found an increased bilirubin concentration in the serum of four of twelve cases of pyuria in infants. These four infants presented the peculiar pale yellowish complexion which is known as a sign of the disease. It is the expression of a septic jaundice.

Münchener medizinische Wochenschrift, Munich

72: 1951-1994 (Nov. 13) 1925

Biochemical Problems. K. Felix.—p. 1951.
Blood Transfusion Technic. R. Stahl.—p. 1952.
*Athletic Training. W. Ewig.—p. 1955.
*Serodiagnosis of Cancer. O. Bott.—p. 1959.
*Hutchinson's Triad and the Endocrines. A. Cedercreutz.—p. 1960.
*Urobilin in Cirrhosis. A. Lichtenstein.—p. 1962.
The Typhoid Group in Bavaria. Rimpau.—p. 1964.
*Sympathicotonus of Brain Arteries in Pregnancy. O. Muck.—p. 1967.
*Liver Function Tests. F. Fischler.—p. 1970. C'cn.
Jean Paul F. Richter and Medicine. G. Sticker.—p. 1973.
Treatment of Fresh Tears of Cervix. H. Baumm.—p. 1975.
Public Health Service in Bavaria. Seiffert.—p. 1976

Athletic Training.—Ewig found a moderate dilatation of the heart in persons training for various sports. This increases the length of the muscle fibers and the energy of their contraction. A hypertrophy was found, instead, in a few cases. An increased amplitude of the blood pressure, and bradycardia were confirmed. Aschner's eyeball compression test, the carotid pressure test, and Erben's test gave about the same results as in persons not under training. Examinations of the blood for changes of the calcium and potassium content revealed hardly any difference, but Chvostek's phenomenon was present in over one half of the athletes (against one third of the controls). The alkali reserve of the blood increased.

Serodiagnosis of Cancer.—Bott confirms the good results with Wigand's tannin test. Yet it is negative with beginning cancer.

Hutchinson's Triad and the Endocrines.—Cedercreutz has collected the evidence which might speak for the possible endocrine genesis of Hutchinson's teeth, parenchymatous keratitis and the typical affection of the labyrinth. The congenital syphilis might attack primarily the endocrine glands.

Urobilin in Cirrhosis of the Liver.—Lichtenstein, using Terwen's method, found a high ratio between the urobilin excreted in the urine and that contained in the feces in cirrhosis of the liver. The elimination by way of the urine is also considerable in pernicious anemia or hemolytic jaundice, but the amount in the feces is much larger.

Sympathicotonus of Brain Arteries in Pregnancy.—Muck observed in many pregnant women prolonged white marks on the mucous membrane of the nose when irritating it with a sound after application of epinephrin. He regards this as a sign of increased sympathetic tonus of the arteries of the head—especially of the brain.

Liver Function Tests.—Fischler reviews the recent additions to the knowledge of the functions of the liver. He pleads for a routine examination of urine for urobilin, which reveals a concomitant disease of the liver as often as the test for albumin reveals disease in the kidney. Starvation as well as one-sided diets injure the liver. The empiric diet for gout—little protein and fat and moderation in general—is the best rest cure for the liver. Intravenous injections of glucose should not be forgotten in acute grave disturbances of the liver (acute atrophy, mushroom poisoning).

Wiener klinische Wochenschrift, Vienna

38: 1229-1252 (Nov. 12) 1925

Endogenous Dermatoses. G. Singer.—p. 1229.
Spirochetes in Vienna Rats. I. Takaki.—p. 1231.
*The Motor and Secretory Function of the Stomach. L. Hess and J. Faltitschek.—p. 1232.
Vasomotor Disease of the Internal Ear. H. Brunner.—p. 1235.
*Insulin and Cholin. K. Waltner.—p. 1237.
*Preparation of Vaccines. H. Popper and F. Silberstein.—p. 1237.
Specialists and Clinicians. E. Stransky.—p. 1241.
Surgical Mistakes of Practitioners. Schnitzler. Supplement.—pp. 1-24.

The Motor and Secretory Function of the Stomach.—Hess and Faltitschek found that patients with ulcers of the stomach show no change in the secretory or motor function of the stomach after paravertebral injection of 5-10 c.c. of a 1 per cent. solution of procain, made in the seventh thoracic segment. In healthy subjects and in gastric neuroses, the increase in both was constant. They believe that the lack of reaction in ulcer patients is due to an organic interruption of nerve conduction.

Insulin and Cholin.—Waltner found an increased susceptibility to cholin in animals during the insulin hypoglycemia.

Preparation of Vaccines.—Popper and Silberstein recommend quinin sulphate for preservation of vaccines.

38: 1253-1276 (Nov. 19) 1925

Ulcers of Stomach and Duodenum. G. B. Gruber.—p. 1253.
*Pepsin and Antipepsin in Ulcer and Nonulcer Cases. H. L. Popper.—p. 1259.
Protein and Sulphur Treatment. B. Dollinger.—p. 1260.
"Splints for the Humerus." C. Ewald.—p. 1264.
"Insulin and Leukocytes." A. Neumann.—p. 1265.
Color Photography in Medicine. E. Preissecker.—p. 1265.
Drug Treatment of Heart Insufficiency. E. Pick.—p. 1266.
Urgent Eye Surgery. V. Hanke. Supplement.—pp. 1-8.

Pepsin and Antipepsin in Ulcers and Nonulcer Cases.—Popper attributes the results of the Kohler antipepsin test only to the differing degrees of acidity of the gastric contents. The method has no diagnostic value.

Zentralblatt für Chirurgie, Leipzig

52: 2577-2640 (Nov. 14) 1925

*Peritonitis After Puncture of Common Bile Duct. A Sohn.—p. 2578.
Strengthening of Vessel Wall. N. J. Gurewitsch.—p. 2581.
Lymphangioplastic Treatment of Elephantiasis. M. Sokolowski.—p. 2583.
Treatment of Hydrocephalus. M. Sokolowski and J. Irger.—p. 2586.
Treatment of Acute Osteomyelitis. A. Fischer.—p. 2589.
Ectopia of the Testis. F. Bernhard.—p. 2592.

Peritonitis After Puncture of Common Bile Duct.—For diagnostic purposes, Sohn punctured the choledochus with a fine needle, during a gastro-enterostomy operation. The patient died four days later from a purulent biliary peritonitis.

Časopis lékařů českých, Prague

64: 1609-1644 (Nov. 7) 1925

Partial Hydronephrosis. J. Rejsek.—p. 1609.
*Hemoclastic Crisis. G. Altschuller.—p. 1613.
Standardization of Tetanus Antiserum. Feierabend.—p. 1616. C'td.
*Tuberculosis of the Placenta. F. Horálek.—p. 1621.
Compression of Common Bile Duct. Kudrnáč.—p. 1624.
Physical Chemistry in Biology. V. Podroužek.—p. 1627.
Bacteriologic Vitamins. J. Stolz.—p. 1628.
Bismuth Treatment. A. Měska.—p. 1632.
Cleaning of Vaccine Virus. K. Urbánek.—p. 1635. C'cn.

Hemoclastic Crisis.—Altschuller considers the shifting of the leukocytes to the left (Arneth) as the most important sign of a true hemoclastic crisis in Widal's sense. He produced it by administration of sugar in diseases of the liver, as well as by Umber's method (milk by the rectum). No shifting was observed in the refractory phase following administration of milk, or after an enema consisting of water.

Tuberculosis of the Placenta.—Horálek found tuberculous nodes in the placenta of a woman who died two months after a normal delivery. The child was 5 months old at the time of the report, and developing normally.

Hospitalstidende, Copenhagen

68: 953-968 (Oct. 15) 1925

*Skin in Surgical Affections. J. Ipsen. Begun, p. 944.

Temperature of the Skin in Surgical Affections.—Ipsen describes his technic for recording the temperature of the skin under a layer of felt, and charts the findings under various conditions. Abnormally high temperatures at certain points, revealed by this technic, aid in differential diagnosis between loose bodies in joints or laceration of a semilunar cartilage and inflammatory processes, for example. The local temperature was exceptionally high with a sarcoma in the knee and with mammary cancers. The findings were not instructive in peritonitis.

Ugeskrift for Læger, Copenhagen

87: 881-904 (Oct. 8) 1925

*Transformation of Glycogen. Lundsgaard and Holbøll.—p. 881.
*Treatment of Genital Gangrene. O. Jersild.—p. 884.
*Schick Reaction in Greenland. E. Bay-Schmidt.—p. 889.
Analysis of Breads. H. Kærn.—p. 889.

Transformation of the Liver Glycogen Into Glucose.—Lundsgaard and Holbøll report research which shows that the glycogen in fresh and finely chopped liver tissue is split into alpha-beta glucose. Insulin does not affect this cleavage. They assume that in the living subject the glycogen undergoes the same transformation. The carbohydrates under the action of insulin are partly oxidized and partly deposited as glycogen. When the insulin is no longer in the blood, the deposits of glycogen are split into glucose, which explains the higher sugar content of the blood in the morning. Is the new glucose—ny glucose, as they call the kind with a lower specific rotating power—an intermediate link in the production and depositing of glycogen?

Neo-Arsphenamin in Treatment of Genital Gangrene.—Jersild gave the drug by the vein, in his twelve cases, and states that the effect on the temperature and the course of the process was so prompt and so constant that this treatment should be given at once in every case, regardless of the temperature or general symptoms.

The Schick Reaction in Eskimos.—Bay-Schmidt relates that a strongly positive reaction was obtained in an average of 68 per cent. of 382 persons in the isolated colony of Julianehaab. A dubious response was obtained in all the others, none giving a decidedly negative reaction. Diphtheria has appeared only once in the colony (1921) and soon died out, attacking only thirty young persons.

87: 905-922 (Oct. 15) 1925

*Action of Liver Tissue on Glucose. Lundsgaard and Holbøll.—p. 905.
Vaccine Therapy of Suppurative Colitis. A. Borghjærg.—p. 909.
Case of Epiploitis Tumefaciens. E. Holm.—p. 912.
Fight Against Rural Tuberculosis. Kjer-Petersen.—p. 914.

Action of Liver Tissue and Insulin on Glucose in Vitro.—Lundsgaard and Holbøll conclude from their latest research that the liver serves in carbohydrate metabolism as a storage place for glucose in the form of glycogen, and has no direct importance for the metabolism of glucose in the organism. Contrary to muscle tissue, liver tissue is not able to form new glucose out of alpha-beta glucose under the influence of insulin.

JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE DEPARTMENT, JULY-DECEMBER 1925

Abstracts of important articles in the following journals have been made in the Current Literature Department of THE JOURNAL during the past six months. Any of the journals, except those starred, will be lent by THE JOURNAL to subscribers in the United States and to Fellows of the American Medical Association for a period not exceeding three days. *Two journals may be borrowed at a time.* No foreign journals are available prior to 1920, nor domestic journals prior to 1923. Requests for periodicals should be addressed to the Library of the American Medical Association and six cents in stamps should be enclosed. This covers the average expense of mailing a journal. Thus most of these journals are accessible to the general practitioner, no matter where located.

A. M. M., Asociacion Medica Mexicana: Continued as Revista de Asociacion Medica Mexicana.
Acta Chirurgica Scandinavica. Irreg. 20 kronor. Stockholm.
Acta Dermato-Venereologica. Irreg. $5.50 per vol. Copenhagen.
Acta Medica Scandinavica. Irreg. $5.50 per vol. Stockholm.
Acta Ophthalmologica. Irreg. $6 per vol. Copenhagen.
Acta Pathologica et Microbiologica Scandinavica. Irreg. $6. Copenhagen.
Acta Pædiatrica. Irreg. $5 per vol. Uppsala.
Acta Scholae Medicinalis Universitatis Imperialis in Kiota. Irreg. 3.30 yen per issue. Tokyo.
American Heart Journal. Bi-m. $7.50. St. Louis.
American Journal of Anatomy. Bi-m. $7.50 per vol. Philadelphia.
American Journal of Diseases of Children. M. $4. A. M. A., Chicago.
American Journal of Electrotherapeutics and Radiology. M. $5. Baltimore.
American Journal of Hygiene. Bi-m. $6. Baltimore.
American Journal of the Medical Sciences. M. $6. Philadelphia.
American Journal of Obstetrics and Gynecology. M. $6. St. Louis.
American Journal of Ophthalmology. M. $10. Chicago.
American Journal of Pathology. Bi-m. $5. Boston.
American Journal of Physiology. M. $5 per vol. Baltimore.
American Journal of Psychiatry. Q. $5 per vol. Baltimore.
American Journal of Public Health. M. $5. New York.
American Journal of Roentgenology and Radium Therapy. M. $10. New York.
American Journal of Syphilis. Q. $8. St. Louis.
American Journal of Tropical Medicine. Bi-m. $5 per vol. Baltimore.
American Review of Tuberculosis. M. $8 per vol. New York.
Anales de la Facultad de Medicina, Universidad de Lima. Bi-m. $1.50.
Anales de la Facultad de Medicina, Universidad de Montevideo. M. 6 pesos.
*Anales de Sociedad Médico-Quirúrgica del Guayas. M. $0.30 per issue. Guayaquil.
*Annaes Brasileiros de Dermatologia e Syphilographia. Bi-m. 20 milreis. Rio de Janeiro.
Annales de l'Institut Pasteur. M. 60 francs. Paris.
Annales des Maladies Vénériennes. M. 60 francs. Paris.
Annales de Médecine. M. 60 francs. Paris.
*Annali di Neurologia. Bi-m. 40 francs. Naples.
Annals of Clinical Medicine. M. $7. Baltimore.
Annals of Medical History. Q. $8. New York.
Annals of Otology, Rhinology and Laryngology. Q. $6. St. Louis.
Annals of the "Pickett-Thomson" Research Laboratory. Irreg. Price varies. London.
Annals of Surgery. M. $10. Philadelphia.
Annals of Tropical Medicine and Parasitology. Irreg. £1 2s. 6d. per vol. Liverpool.
*Archiv Biologitcheskikh Nauk. Bi-m. 6 rubles. Moscow.
Archiv für Gynäkologie. Irreg. Price varies. Berlin.
Archiv für Kinderheilkunde. Irreg. 15 gold marks per vol. Stuttgart.
Archiv für Klinische Chirurgie. Irreg. Price varies. Berlin.
Archiv für Verdauungs-Krankheiten. Irreg. 18 marks per vol. Berlin.
Archives of Dermatology and Syphilology. M. $8. A. M. A., Chicago.
Archives Franco-Belges de Chirurgie. M. 60 francs. Brussels.
Archives de l'Institut Pasteur de Tunis. Q. Tunis.
Archives of Internal Medicine. M. $5. A. M. A., Chicago.
Archives des Maladies de l'Appareil Digestif et de la Nutrition. Monthly except August and September. 50 francs. Paris.
Archives des Maladies du Cœur, des Vaisseaux et du Sang. M. 50 francs. Paris.
Archives de Médecine des Enfants. M. 45 francs. Paris.
Archives Médicales Belges. M. 30 francs. Brussels.
Archives of Neurology and Psychiatry. M. $8. A. M. A., Chicago.
Archives of Ophthalmology. Bi-m. $6. New York.
Archives of Otolaryngology. M. $6. A. M. A., Chicago.
Archives of Surgery. M. $8. A. M. A., Chicago.
Archivio Italiano di Chirurgia. Irreg. 100 lire per vol. Bologna.
*Archivos Españoles de Enfermedades del Aparato Digestivo y de la Nutrición. M. 21 pesetas. Madrid.
Archivos Españoles de Pediatria. M. 25 pesetas. Madrid.
Archivos Latino-Americanos de Pediatria. M. $5. Buenos Aires.
*Ars Medica. M. 25 pesetas. Barcelona.
Atlantic Medical Journal. M. $3. Harrisburg.
Australian Journal of Experimental Biology and Medical Science. Q. £1 1s. Adelaide.
Beiträge zur klinischen Chirurgie. Irreg. Price varies. Berlin.
*Boletín del Instituto de Medicina Experimental para Estudio y Tratamiento del Cáncer. Bi-m. Buenos Aires.
*Boletin de Sociedad de Cirugia de Chile. Irreg. 20 pesos. Santiago.
Boston Medical and Surgical Journal. W. $6.
Brain, A Journal of Neurology. Irreg. 24s. London.
Brazil-Medico. W. $5. Rio de Janeiro.
Bristol Medico-Chirurgical Journal. Q. 10s. 6d.
British Journal of Anæsthesia. Q. $10. Manchester.
British Journal of Children's Diseases. Q. $6. London.
British Journal of Dermatology and Syphilis. M. 2 guineas. London.
British Journal of Experimental Pathology. Bi-m. £2. London.
British Journal of Medical Psychology. Q. $7 per vol. London.
British Journal of Ophthalmology. M. 2 guineas. London.
British Journal of Radiology. M. £2 2s. London.
British Journal of Surgery. Q. $10. Bristol.
British Journal of Tuberculosis. Q. $2.50. London.
British Medical Journal. W. 1s. 3d. per issue. London.
*Bruxelles Médical. W. 35 francs. Brussels.
Bulletin de l'Académie de Médecine. W. 50 francs. Paris.
Bulletin of the Johns Hopkins Hospital. M. $4. Baltimore.
Bulletin Médical. Semi-w. 25 francs. Paris.
*Bulletin of the Naval Medical Association. Q. Tokyo.
Bulletin of the Porto Rico Medical Association. Q. $3. San Juan.
Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris. W. 80 francs. Paris.
Calcutta Medical Journal. M. Rs. 5. Calcutta.
California and Western Medicine. M. $5. San Francisco.
Canadian Medical Association Journal. M. $6. Montreal.
Casopis Lekaru Ceskych. W. 170 č korun. Prague.
China Medical Journal. M. $10 Mex. Shanghai.
*Clinica. M. Montevideo.
*Clinica Medica Italiana. Bi-m. 42 lire. Milan.
*Clinica Pediatrica. M. 25 lire. Modena.
Colorado Medicine. M. $2.50. Denver.
Comptes Rendus des Séances de la Société de Biologie et de ses Filiales. W. 80 francs. Paris.
Crónica Médica. M. 6 *pesos*. *Lima, Peru*.
Dermatologische Zeitschrift. M. Price varies. Berlin.
Deutsche Medizinische Wochenschrift. W. 8.60 marks per quarter. Leipzig.
Deutsche Zeitschrift für Chirurgie. Irreg. $4.80 per vol. Leipzig
Deutsches Archiv für Klinische Medizin. Irreg. $4 30 per vol. Leipzig.
*Echo Medical du Nord. W. 12 francs. Lille.
Edinburgh Medical Journal. M. 40s.
Encéphale. M. 80 francs. Paris.
Endocrinology. Bi-m. $6. Los Angeles.
Finska Läkaresällskapets Handlingar. Bi-m. 120 Finnish marks. Helsingfors.
Gaceta Médica de Caracas. Semi-m. 24 bolivares. Caracas, Venezuela.
*Gaceta Medica de Mexico. Irreg. 1 peso per issue. Mexico City.
Giornale Italiaino de Dermatologia e Sifilologia. Bi-m. 100 lire. Milan.
Glasgow Medical Journal. M. 30s.
*Grèce Medicale. M. 25 francs. Athens.
Gynécologie et Obstétrique. M. 70 francs. Paris.
Heart. Irreg. 37s. 6d. per vol. London.
Hospitalstidende. W. 30 kroner. Copenhagen.
Hygiea. Semi-m. 24 kroner. Stockholm.
Illinois Medical Journal. M. $3. Oak Park.
Indian Journal of Medical Research. Q. £1. 1s. 4d. Calcutta.
Indian Medical Gazette. M. Rs. 18. Calcutta.
Indian Medical Record. M. 7 Rs. 8 annas. Calcutta.
International Journal of Psycho-Analysis. Q. $6.50. London.
Irish Journal of Medical Science. M. £1 5s. Dublin.
Jahrbuch für Kinderheilkunde und Physische Erziehung. M. 18 marks. Berlin.
Japan Medical World (Nippon-No-Ikai Sha). M. $6. Tokyo.
Journal of Anatomy. Q. $10.75 per vol. London.
Journal of the Arkansas Medical Society. M. $3. Little Rock.
Journal of Bacteriology. Bi-m. $5 per vol. Baltimore.

W.—Weekly; Semi-w.—Semi-weekly; Tri-w.—Tri-weekly; M.—Monthly; Semi-m.—Semi-monthly; Bi-m.—Bi-monthly; Q.—Quarterly
*Cannot be loaned.

Journal of Biochemistry. Q. $5.50 per vol. Tokyo.
Journal of Biological Chemistry. M. $5 per vol. New York.
Journal of Bone and Joint Surgery. Q. $5. Boston.
Journal of Cancer. Q. 10s. 6d. Dublin.
Journal of Cancer Research. Q. New York.
Journal de Chirurgie. M. 90 francs. Paris.
Journal of Clinical Investigation. Bi-m. $5 per vol. Baltimore.
Journal of Comparative Neurology. Bi-m. $7.50 per vol. Philadelphia.
Journal of Comparative Psychology. Bi-m. $5 per vol. Baltimore.
Journal of Experimental Medicine. M. $10. New York.
Journal of the Florida Medical Association. M. $3. Jacksonville.
Journal of General Physiology. Bi-m. $5. New York.
Journal of Hygiene. Q. $10. London.
Journal of Immunology. Bi-m. $5 per vol. Baltimore.
Journal of the Indiana State Medical Association. M. $3. Fort Wayne.
Journal of Industrial Hygiene and Abstract of Literature. M. $6. Boston.
Journal of Infectious Diseases. M. $5. Chicago.
Journal of Iowa State Medical Society. M. $3. Des Moines.
Journal of Kansas Medical Society. M. $2. Topeka.
Journal of Laboratory and Clinical Medicine. M. $8.50. St. Louis.
Journal of Laryngology and Otology. M. 40s. Edinburgh.
Journal of Maine Medical Association. M. $2. Portland.
Journal de Médecine de Bordeaux du Sud-Ouest. Semi-m. 35 francs.
*Journal de Médecine de Lyon. Semi-m. 40 francs.
Journal of Medical Association of Georgia. M. $3. Atlanta.
Journal of Medical Society of New Jersey. M. $2. Orange.
Journal Mental Science. Q. 80s. London.
Journal of Metabolic Research. M. $10. Morristown.
Journal of Michigan State Medical Society. M. $5. Grand Rapids
Journal of Missouri State Medical Association. M. $2. St. Louis.
Journal of Nervous and Mental Diseases. M. $10. New York.
Journal of Neurology and Psychopathology. Q. 30s. London.
Journal of Obstetrics and Gynæcology of the British Empire. Q. 41s. Manchester.
*Journal of Okayama Medical Society. M. Okayama.
Journal of Oklahoma State Medical Association. M. $4. Muskogee.
*Journal of Oriental Medicine. Q. Dairen, South Manchuria.
Journal of Parasitology. Q. $3. Urbana.
Journal of Pathology and Bacteriology. Q. 40s. Edinburgh.
Journal of Pharmacology and Experimental Therapeutics. M. $6. Baltimore.
Journal of the Philippine Islands Medical Association. M. $6. Manila.
Journal of Physiology. Irreg. Price varies. London.
Journal des Praticiens. W. 40 francs. Paris.
Journal de Radiologie et d'Électrologie. M. 75 francs. Paris.
Journal of Radiology. M. $5. Omaha.
Journal of South Carolina Medical Association. M. $3. Greenville.
Journal of State Medicine. M. 2s. per issue. London.
Journal of Tennessee State Medical Association. M. $2. Nashville.
Journal of Tropical Medicine and Hygiene. Semi-m. 30s. London.
Journal d'Urologie Médicale et Chirurgicale. M. 70 francs. Paris.
Journal of Urology. M. $4. Baltimore.
Kentucky Medical Journal. M. $5. Bowling Green.
*Kenya Medical Journal. M. 25s. Nairobi.
Kitasato Archives of Experimental Medicine. Irreg. 1.20 yen per issue. Tokyo.
Klinische Wochenschrift. W. 24.40 gold marks. Berlin.
Lancet. W. $12. London.
Laryngoscope. M. $6. St. Louis.
Lisboa Médica. M. 75 milreis. Lisbon.
Lyon Chirurgical. Bi-m. 60 francs. Paris.
Lyon Médical. W. 30 francs.
*Marseille-Medical. 3 issues per month. 25 francs.
Médecine. M. 20 francs. Paris.
Mededeelingen van Dienst der Volksgezondheid in Nederlandsch-Indië. Irreg. Batavia.
Medical Journal and Record. Semi-m. $6. New York.
Medical Journal of Australia. W. £2 5s. Sydney.
Medical Journal of South Africa. M. £1 5s. Johannesburg.
*Medicina. M. $5 Mex. Mexico City.
Medicine. Q. $5 per vol. net. Baltimore.
Medizinische Klinik. W. 36 gold marks. Berlin.
Memorias do Instituto Oswaldo Cruz. Irreg. 20 reis per issue. Rio de Janeiro.
Mental Hygiene. Q. $3. Albany.
Military Surgeon. M. $4. Washington.
Minnesota Medicine. M. $3. St. Paul.
Mitteilungen aus den Grenzgebieten der Medizin und Chirugie. Irreg. Jena.
Monatsschrift für Geburtshülfe und Gynäkologie. M. 18 marks per vol. Berlin.
Monatsschrift für Kinderheilkunde. M. Price varies. Leipzig.
Münchener Medizinische Wochenschrift. W. $8. Münich.
National Medical Journal of China. Bi-m. $2.50. Shanghai.
Nebraska State Medical Journal. M. $2.50. Lincoln.
Nederlandsch Maandschrift voor Geneeskunde. M. 16 florins. Leiden.
Nederlandsch Tijdschrift voor Geneeskunde. W. 29 florins. Haarlem.
Néoplasmes. Bi-m. 30 francs. Paris.
New Orleans Medical and Surgical Journal. M. $3.
New York State Journal of Medicine. M. $3.50. New York.
Norsk Magazin for Lægevidenskaben. M. 25 kroner. Oslo.
Northwest Medicine. M. $2. Seattle.
Nourrisson. Bi-m. 30 francs. Paris.
Occupational Therapy and Rehabilitation. Bi-m. $5. Baltimore.
Ohio State Medical Journal. M. $3. Columbus.
Paris Médical. W. 50 francs.
*Pathologica. Semi-m. $6. Genoa.
Pediatria. Semi-m. 80 lire. Naples.
*Pediatria-Archivio di Patologia e Clinica Pediatrica. Irreg. 160 lire. Naples.
Philippine Journal of Science. M. $5. Manila.
Policlinico (sez. chir.) and (sez. med.). M. 45 lire each; (sez. prat.). W. 90 lire. Rome.
Practitioner. M. 2 guineas. London.
Prensa Médica Argentina. 3 issues per month. $6. Buenos Aires.
Presse Médicale. Semi-w. 60 francs. Paris.
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SOCIETIES

A.—Association
Acad.—Academy
Am.—American
Coll.—College
Conf.—Conference
Cong.—Congress
Conv.—Convention
Dist.—District
Hosp.—Hospital
Internat.—International
M.—Medical or Medicine
Nat.—National
Phar.—Pharmaceutical
Phys.—Physicians
Ry.—Railway
S.—Society
Surg.—Surgical or Surgeon, Surgery

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